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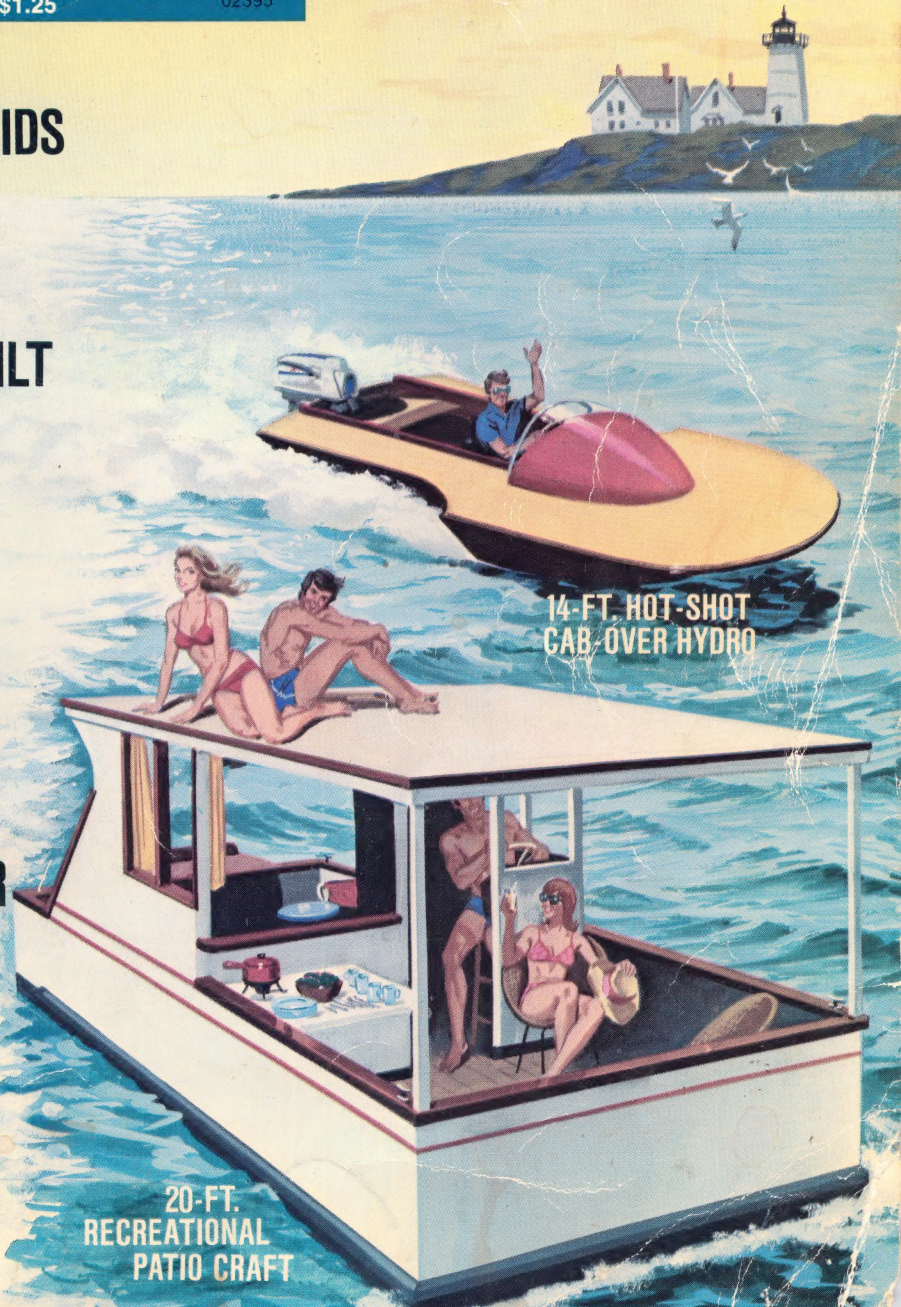

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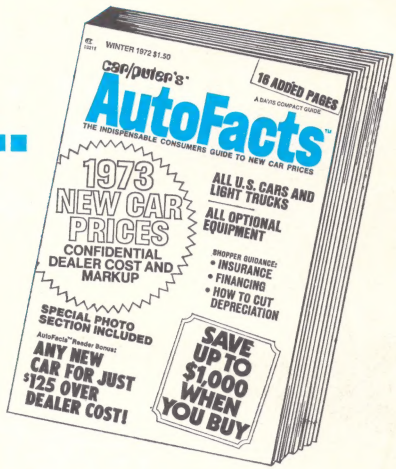

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BOAT BUILDER

SUMMER 1973 EDITION

WHAT'S NEW 5
A wide-ranging choice of products for the boatman

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Made for shallow water exploring, it builds for about $50

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Resembling the Unlimited Class biggies, it's a surfire winner

REBEL 22
A fast-moving runabout ideal for skiing. Build it from a kit or plans

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BOAT BUILDER

Summer, 1973

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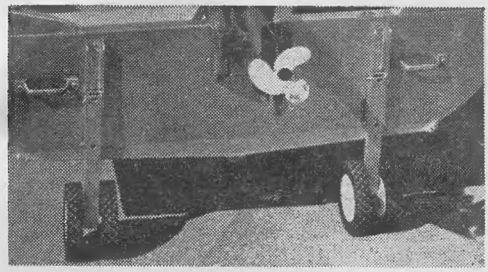
what's NEW



Those fishermen who cartop their boats to their favorite lake and then find it a hard job getting their boat from the car to the water and back should be interested in Roll-A-Boat wheels. It is said that with the aid of these wheels a boat can be rolled upside down or rightside up with the motor and all gear aboard for easy launching.

Installation is accomplished when two aluminum channels are bolted or screwed vertically to each side of the transom and the aluminum wheel "legs" fastened in the channels with two quick-disconnect pins on each side. After the boat has been launched with the wheels down, the bottom pin can be pulled and the wheels pivoted on the top pin and locked upright by inserting the first pin through the holes at the top of each channel. Otherwise the wheels can be completely removed by pulling both pins securing each leg. Price for the Roll-A-Boat wheel set is $34.50.

American Recreational Products, Dept. BB, 15104 Highway 99, Lynnwood, Wash. 98036.

The Model 66-F compass recently introduced by Airguide is said to be ideal for recessed mounting in the dashtop or console of both small and medium-sized craft. Standing just 2-in. above the mounting surface, it measures 4-in. across its chrome-plated brass mounting flange.

The direct-reading card is marked to 5°, with white graduations and is moistened by a special oil fill which rides on a jeweled movement for smooth action. Other features include a black Cycolac sunshade which adjusts to deflect glare and a black anodized aluminum base which houses a red

(Continued on following page)

WHAT'S NEW

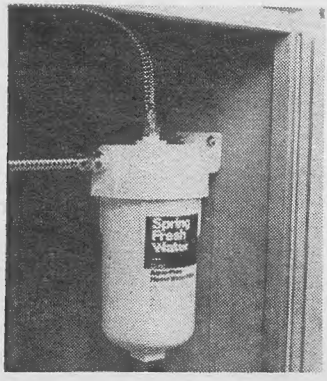
(Continued from preceding page)

night light along with a full compensating mechanism to nullify the effects of stray magnetic fields on the compass. The base fits into a 3¼-in. hole in the mounting surface, requiring a 2¾-in. clearance below the surface. Price is $17.95.

Airguide Instrument Co., Dept. BB, 2210 West Wabansia Ave., Chicago, Ill. 60647.

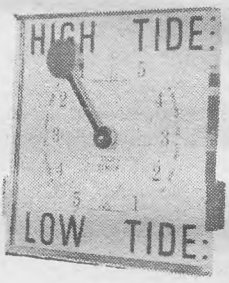
The Aqua-Pure water filter is said to be effective in improving the quality of drinking water on boats. According to the manufacturer, it eliminates the unpleasant metal or fiberglass taste of water tanks, as well as removing other taste-spoilers and particles of rust and dirt. A single-faucet, dual purpose unit that is compact and can be installed easily under the average galley sink, the water filter is comprised of a sturdy filter housing, a two-stage filter cartridge to trap dirt and rust and remove tastes and odors, and an optional, fast-installation kit.

Installation may be accomplished by either the boatyard plumber or the boatman himself—in this respect an economical installation kit is offered which contains along with the necessary directions mounting hardware and special self-tapping connectors. Installation begins when the cold water is shut off and self-tapping clamps are hand tightened to the exposed undersink pipe, making clean punctures to draw water through the filter and then on to the regular cold water faucet. The housing (with dual-purpose filter cartridge inside) is then positioned under the sink and screwed into place by means of its integrated mounting bracket. Next flexible tubing is affixed to the water pipe and attached to the filter. All connections are self-made and watertight, with no pipe cutting, sweating or threading ever required.



The Aqua-Pure filter unit is available through marine hardware and plumbing dealers for about $29.95, the optional boat owners' self-tapping valve installation kit is $14.95.

AMF Cuno, div. AMF, Inc., Dept. BB, 400 Research Parkway, Meriden, Conn., 06450.



A handy accessory for boatmen, fishermen and scuba divers is the Tide Timer, a special tide clock recently introduced by Chris-Craft. It is said to tell at a glance the precise, present stage of the tide—high, low, rising, falling and the amount of time till the next change. It features an accurate jewelled movement which is timed to the tides themselves and not to the sun and moon. It has a large, easy to read 6-in. x 6-in. face with a prominent single tide range indicator hand that is legible from a distance.

The Tide Timer can be used along the U.S. Eastern Seaboard or anywhere else where there are two complete tidal cycles daily. It is made of acrylic and brushed aluinum, and stands on counter, desk, mantel or can be wall hung. It is available at a cost of $29.95 plus $1 for postage and handling from the manufacturer.

Chris-Craft Marine Accessories Div., Dept. BB, 2001 Detroit Rd., Algonac, Mich. 48001. ■

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Send a manuscript describing detailed construction of the boat design along with a running shot of the completed craft, step-by-step photos with appropriate captions, detailed drawings giving actual dimensions, a self-addressed stamped envelope and a Bill of Materials listing to:

The Editors
BOAT BUILDER
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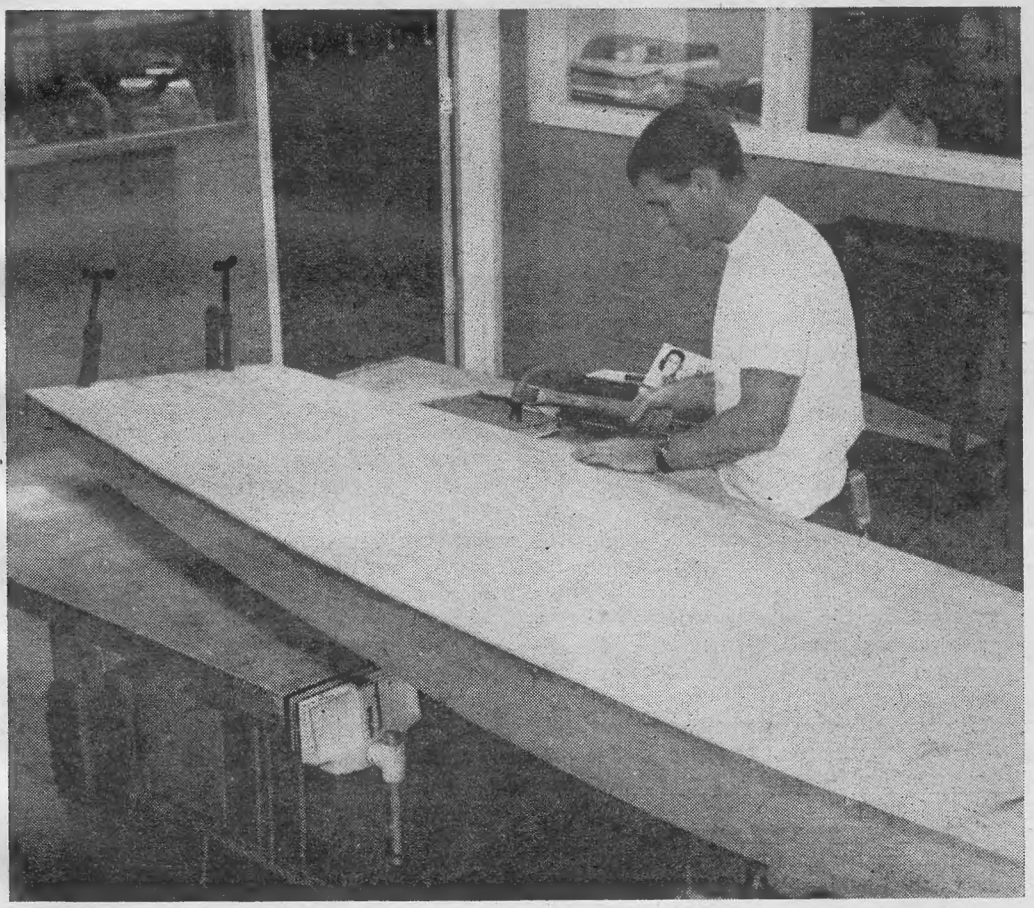
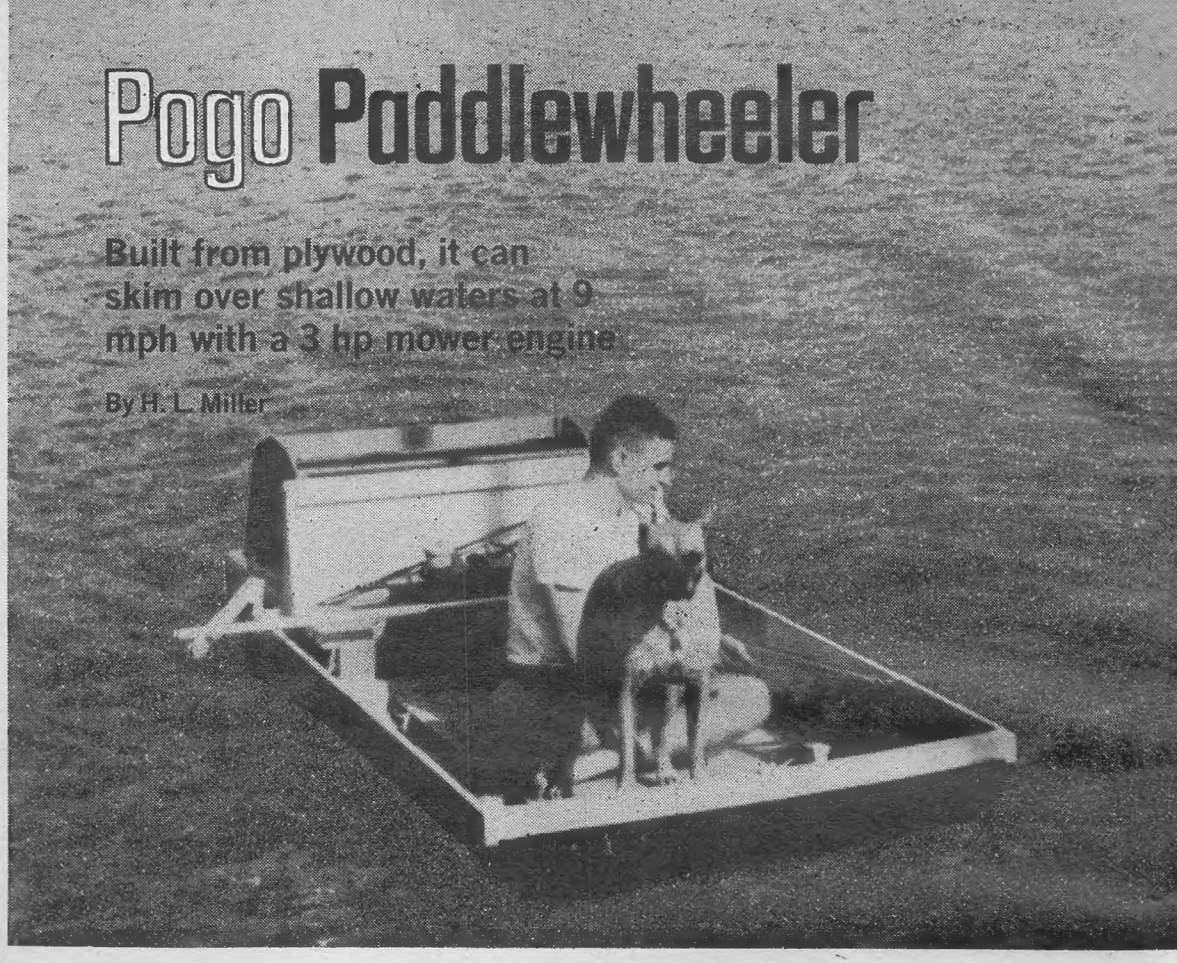


GOOD LUCK!! Maybe your design will be one of those chosen to be featured in a future edition of BOAT BUILDER. ■

Pogo Paddlewheeler

Built from plywood, it can skim over shallow waters at 9 mph with a 3 hp mower engine

By H. L. Miller



Shades of the Mississippi! Jimmy Tench of Sarasota, Florida, isn't about to try to navigate any rough waterways in the paddlewheeler he built from a single 4′ x 8′ sheet of exterior grade plywood, but he skims along over shallow waters at 9 miles an hour under the impetus of a 3 hp mower engine.

For his hobby of gathering orchids and exploring the placid bayous near home, Jimmy needed a boat with shallow draft and a propulsion system that wouldn't foul its propellor in the dense growths of mangrove, grass and hyacinth along the riverbanks.

Thus his flat-bottomed paddlewheeler can skim right over the watery vegetation and take him right up to the shores bordering the inlets.

Jimmy bought the mower engine from a lawnmower dealer for a modest $15. He overhauled it himself, spending another few dollars for new rings and gaskets. His total cost for the boat and engine came to just about $50—plus six weeks of spare time during summer vacation from the high school where his dad, Jimmy Sr., is a math teacher.

Pogo is quite simple to construct. The 4′ x 8′ sheet of ¼″ plywood provides the bottom, with some left over for the spray shield. The sides are two 6′ lengths of 1″ x 10″ fir cut to the shape shown in the drawing. The transom is another piece of 1″ x 10″ fir, cut to a 47″ length, and a beveled piece of 2″ x 4″ x 47″ stock is used at the bow.

First assemble the frame, which consists of transom, sides and bow piece. Use waterproof glue and 1½″ brass or galvanized screws at each joint. Then install the plywood bottom, using glue and Anchorfast copper nails. Note that the 48″-wide bottom does not cover the full width of the frame. Center it on the transom and work forward, allowing the frame to project equally on each side. When you reach the bow curve, the bottom may be bent easily by soaking it with hot water and clamping it until the fastenings are in.

After purchasing a junked lawnmower engine for $15, Jimmy overhauled it and added the right angle drive. Note the clutch arrangement that tightens or loosens the drive belt. Including money spent for new rings and gaskets, total cost for boat and engine was $50.

Next the reinforcing strips are installed on each side. These strips should project beyond the bottom panel so that their outside edges are flush with the frame sides. Use glue and 1¼" screws to secure the strips and, when the job is done, fill the recesses between the strips and the sides with calking compound.

With the hull complete, the 2" x 4" engine supports and the 2" x 2" battens are installed inside. First cut a ¼" x 1" notch about three inches from each end in the bottom of each piece. These limber holes will allow water to run the length of the hull and flow out through a drain which is later installed in the transom. The 2 x 4's are secured with glue, screws through the sides, and four extra-long lag bolts which are passed through from the bottom, and double as engine mounts. The 2 x 2's are simply glued and screwed from the bottom and sides. Notching the transom and installing the paddle wheel support frame completes the basic structure.

The circular end panels of the paddle wheel assembly carry eight blades spaced equi-distant around their perimeters. The blades, 1" x 2½" fir, are set on 1" x 1" cleats for added strength at the joints. A detail shows the half-inch steel shaft assembly which passes through the middle of the wheel and terminates in pillow blocks mounted on the support frame.

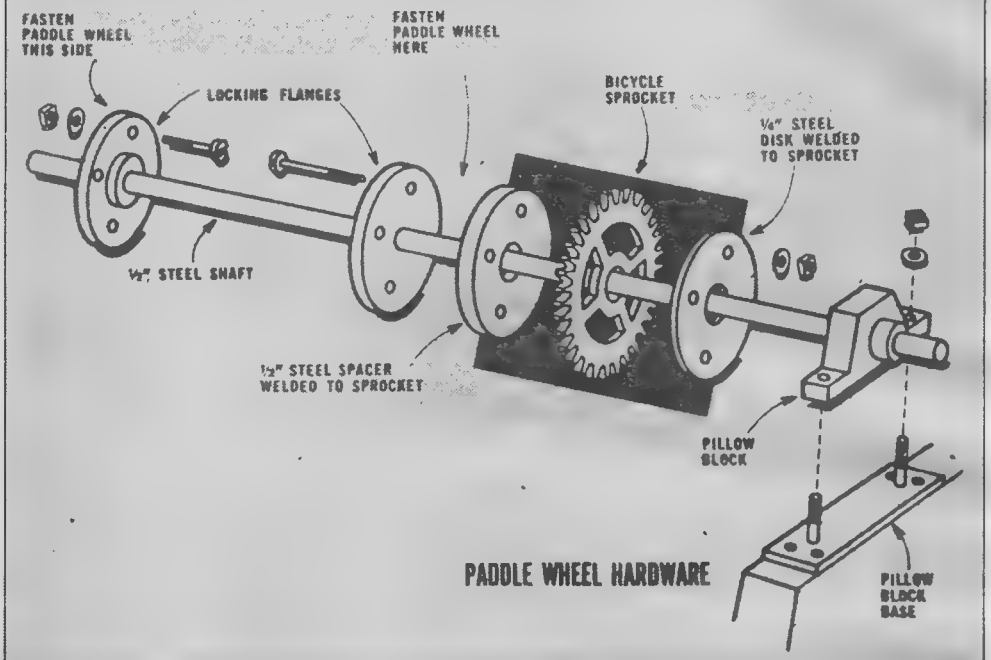
To decrease the speed of the paddle wheel and permit mounting of the engine in the center of the boat, Jimmy used a series of reductions. A 10:1 right angle reduction gear which came from an old riding mower in a junk yard was bought for $5. Between this gear and the paddle wheel, a 3:1 reduction was used.

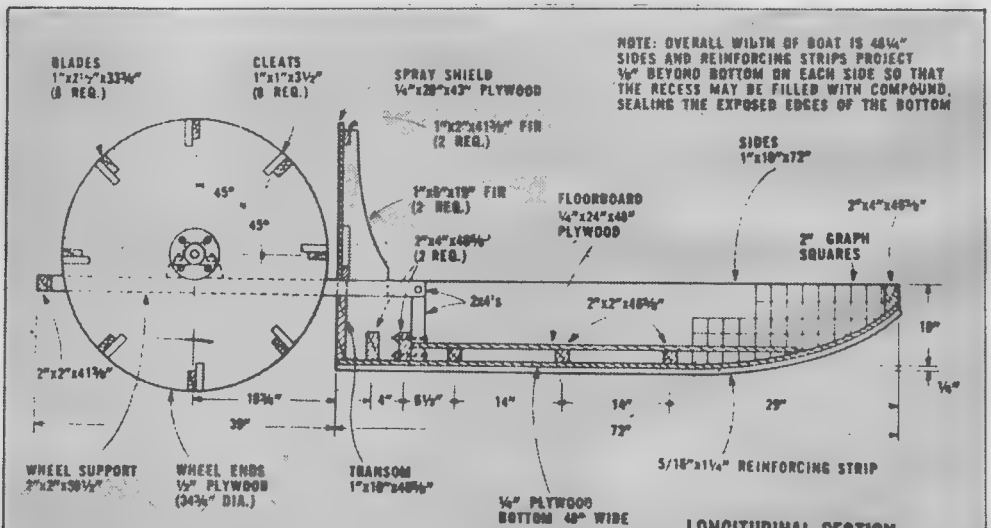
This was accomplished by welding a sprocket to the output shaft of the gear and coupling it to the sprocket on the paddle wheel axle with a No. 41 bicycle chain. Between the engine and the right angle gear, a 2:1 reduction was used. Thus the total reduction is 60:1, which properly loads a Briggs-Stratton Model 6-S or equivalent engine.

For convenience, two engine controls are

(Text continues, page 13)

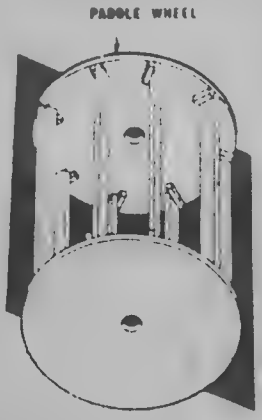
Pogo Paddlewheeler

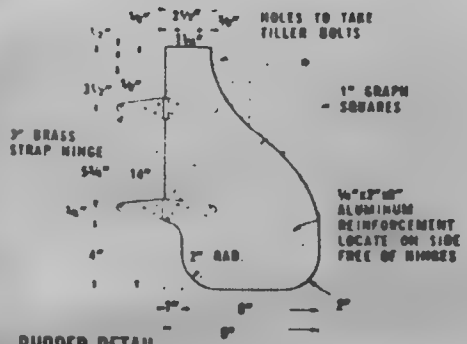




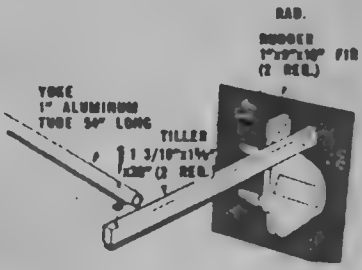
Pictured on top is detailed drawing of hardware used for the paddle wheel, including bicycle sprocket and pillow block. Below, longitudinal section detailed with measurements given for blades, cleats, wheel support and wheel ends, transom, etc. As noted the overall width of the Pogo Paddlewheeler measures up to 48¼".

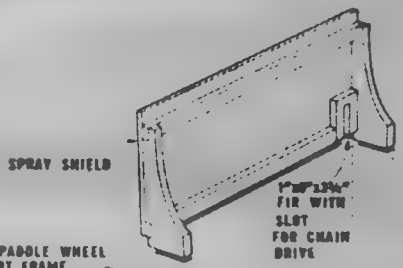
Pogo Paddlewheeler

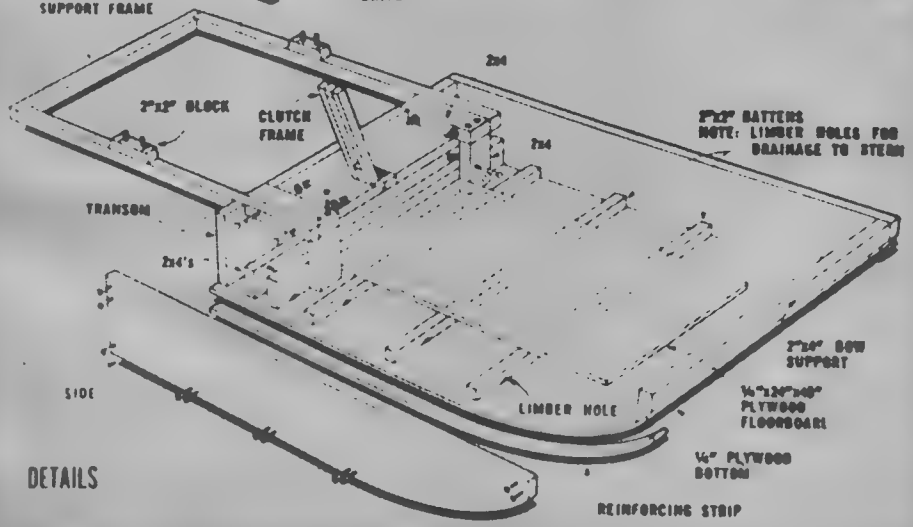




RUDDER DETAIL

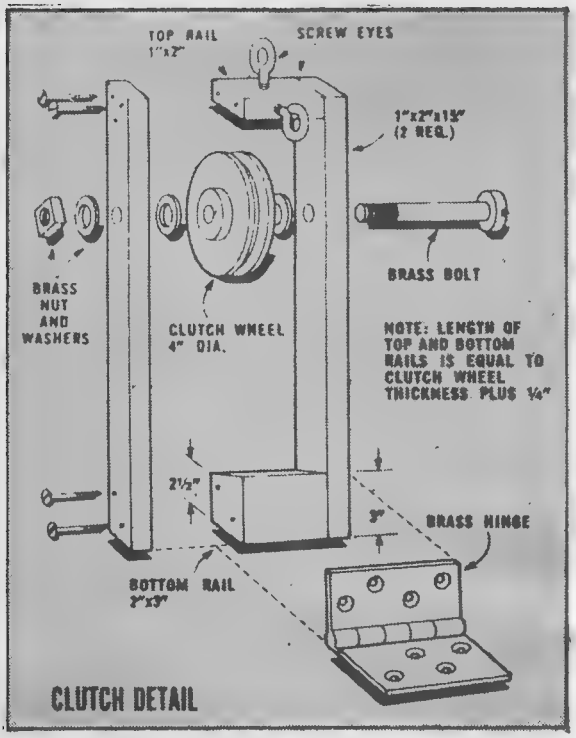






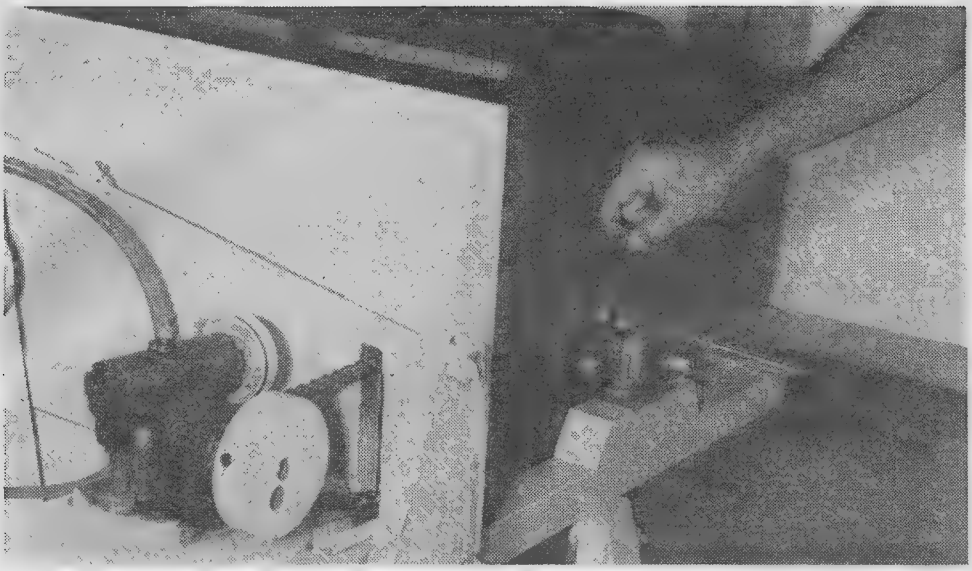
DETAILS

• Craft Print No. 374 in enlarged size for building Pogo Paddlewheeler is available at $5.00. Order by number. To avoid possible loss of coin or currency in the mails, please remit by check or money order (no COD's or stamps) to Craft Print Div., Boat Builder, 229 Park Ave. South, New York, N.Y. 10003. N.Y.C. residents should add 7% sales tax.



Illustrated here is clutch detail. Mounted between the engine and the gear, the clutch is basically a spring-loaded idler wheel operating inside a pivoting wooden frame, controlled by a steering cable passing through pulleys to bow.

The clutch control as pictured here consists of a rudder control cable connected through pulleys to the spring-loaded clutch assembly. The handle slips behind the eyebolt to hold clutch in proper engaged position.



As shown here the reduction gear is a right angle type; the bicycle chain passes from the sprocket on the paddle wheel through the spray shield. To decrease the speed of the paddle wheel and to mount the engine in the center, a series of reductions were used.

carried forward. A cable leads to a throttle control lever mounted on one side, and a simple single pole switch is installed below the lever and wired so the engine may be stalled by grounding out its spark plug to the engine housing.

The clutch is mounted between the engine and the gear and is essentially a spring-loaded idler wheel operating inside a pivoting wooden frame that is controlled by means of a steering cable passing through pulleys to the bow.

A refinement here would be a rubber-faced brake mounted in conjunction with the clutch to prevent creeping when the clutch is disengaged.

Pogo is steered by dual rudders, has a spray shield which deflects paddle wheel spray, and a sheet plywood floor on which Jimmy sits as he wends his way around the waterways, his faithful boxer by his side.

He says: "A water jet boat was eliminated from consideration because of its cost and bulk. An airboat seemed the answer, but it would have cost some real money. This left the age-old paddlewheel idea for propulsion.

"*Pogo* operates in very shallow water and is efficient at low speeds and resists grass foul-up. At higher speeds lavitation occurs and results in loss of power, but since speed was not a prime objection, this is okay."

The paddlewood ends are made of ½" plywood, and while the steel shaft Jimmy used is ½", it may be thicker, for at near flank speeds even a ½" shaft might flex. In some cases it may be needful to utilize a channel, as a guide for the chain, to keep it from skidding off the wheel sprocket. The dual rudders extend an inch below the hull and are more than adequate for good maneuverability. The use of tilting rudders is suggested to avoid the danger of damaging them in shallow water, and there are no ribs across the bottom of the hull to catch and snag on vegetation. A through-hull fitting was utilized by Jimmy as the best method of draining the water, since *Pogo* remains out of the drink when not in use.

To make *Pogo* safer for two persons, Jimmy suggests making the 10" freeboard 12", and increasing the boat's length by two feet.

In lieu of the muffler that was originally on the lawnmower engine, Jimmy installed a 12" nipple of ½" drilled pipe for a deep-throated roar dear to the adolescent heart. ■

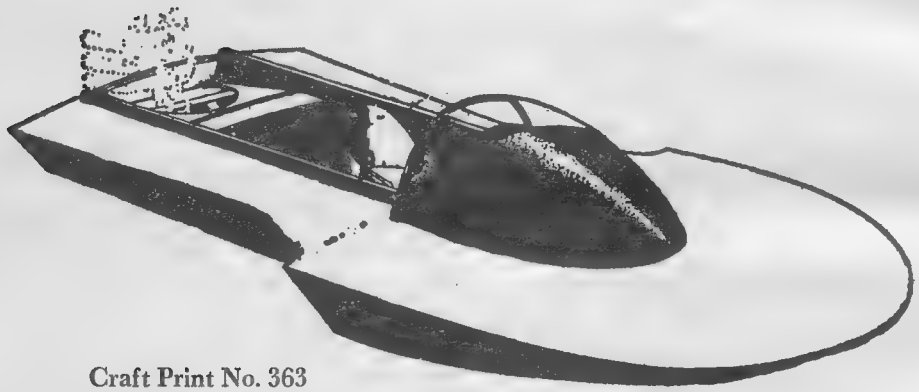
BILL OF MATERIALS

Quan.	Size and Description		Use
2	¼" x 4' x 8'	Marine plywood	Bottom, spray shield, reinforcing strips, floorboard
1	½" x 4' x 8"	Marine plywood	Paddle wheel end panels
2	1" x 10" x 14"	Fir	Rudders
2	1" x 10" x 6'	Fir	Sides
1	1" x 10" x 4'	Fir	Transom
4	2" x 4" x 4'	Fir	Bow piece, motor mounts
4	2" x 2" x 4'	Fir	Bottom battens, wheel support frame rear member
2	2" x 2" x 5'	Fir	Wheel support frame side members
12	1" x 2" x 3'	Fir	Spray shield cleats, paddles, tillers
1	1" x 6" x 4'	Fir	Spray shield supports, chain guide
1	1" x 1" x 6'	Fir	Paddle wheel cleats, clutch frame
1	1" dia. x 54"	Aluminum tube	Tiller yoke
1	½" dia. x 54"	Steel rod	Wheel shaft

Lawn mower engine, right angle drive, and paddle wheel hardware as illustrated.

CAB-OVER HYDRO

Originally called the X-1, this three-point hydroplane has hit 75 mph. Closely resembling big Unlimited Class hydros, it can be powered by 50 to 100 outboard horses



Craft Print No. 363

□ THE X-1 is a boat for the man who not only wants to build a fast craft, but wants something extra to satisfy his ego. This 14′ "cab over" three-point hydroplane will reach speeds up to 75 mph, and its appearance is similar to some of the big Unlimited Class hydros that race for the Gold Cup.

In action, the X-1 could be compared to a two-stage rocket. A racing driver friend of ours explains it this way: "The first stage is like a hog wallowing as the hull is struggling to become airborne. The throttle is gradually applied until the hull breaks loose from the water. Then, in the second stage, the boat has left behind the suction that has held it to the water; it's as if brakes were suddenly released as the hydro shoots forward. The hull appears to be supported only on a fine mist, and the propeller, only partially submerged, throws back the rooster tail that's characteristic of hydros."

You can use anything from a 50 hp motor to a 100 hp outboard on the X-1. With the big engine, you can expect a top speed of about 75 mph; with a special lower unit that cuts down on drag, speed will be even higher.

Lumber. Western spruce is the first choice for frames and stringers, but hemlock, white fir, or Douglas fir are wholly satisfactory. Plywood for sides and bottom must be the best grade, either Marine or AA, because of the stresses which a hydro must withstand. If the boat is going to be painted, use Douglas fir; if it is to be varnished, we suggest African mahogany plywood.

Fastenings. Use cadmium-plated steel screws to fasten plywood to framing; ringed nails and screws are used for fastening stringers and frames together. Thin gauge ringed nails, 1″ long, may be used to fasten decking to the framing; use bronze nails if the deck is to be varnished, as sanding in preparation for the varnish will take off the plating of galvanized nails.

Mix fine sawdust with a waterproof glue such as Weldwood; this makes a non-drip glue that should be used on all mating surfaces before fastening with screws or nails.

Patterns. Full size patterns will be needed for many of the structural members, including the stem plate, transom, and frames #1-#4. A 4′ x 8′ plywood panel placed across two sawhorses makes an excellent drawing board. Use either wrapping paper, or the paper, available without charge from most lumber yards, that's used as wrapping around wallboard. Draw the patterns on the paper, following the dimensions shown.

Construction. Cut out the transom from ¾″ plywood and use it as a guide to mark the transom framing. Cut the framing members to shape, and fasten them to the transom with 1½″ #8 screws, spaced about 3″ apart, after coating mating surfaces with glue.

Side and bottom frame members are 3″ wide, and are sawn from standard 1x4's. Chine joints at frames #1, #3, and #4 are secured with ¼″ plywood gussets fastened by 1″ #8 flat head screws. Make up the keelson as shown in Figs. 2 and 3, using a 2x4x14′. Make up the stem as shown in Figure 4.

Notch all frames, except at the transom, for the keelson. A 2x8 knee is used at the transom, with ¼″ plywood gussets on each side of the knee. Fasten the transom to the knee with 1¾″ #8 flat head screws; 2½″ #10 flat head screws are used to attach the keelson to the knee. Fasten the gussets to the knee and keelson with 1″ #8 flat head screws.

Position the frames on top of the keelson at their respective places, and fasten them with one 2½″ #10 flat head screw at each joint. Notch frames #1 and #2 for the stem plate, and position this unit in the notches. Before fastening, fit the stem to the keelson and stem plate. Use 2½″ #10 screws to fasten the stem to the plate and keelson, and two 1¾″ #8 screws at each plate to frame joint.

A single 1x4x10′ is cut in half lengthwise to make the two chines. Notch the frames for the chines, and use one 1¾″ #8 flat head screw to fasten the chines at each frame.

Four 1x6x10's are cut in half lengthwise to make up eight battens. These battens are spaced equidistant between the chines and keelson. It will be necessary to notch the transom framing and frames #1 and #2 for the battens, but not frames #3 and #4. Fasten the battens in place with 1¾″ #8 flat head screws, and then fair the framework so the plywood will lie flush against it at all joints. Chine and batten joints along the outside of the transom are closed with an outer frame made from 1x4x7′ stock. Coat mating surfaces with a good synthetic rubber sealant, and screw fasten the frame to the transom with 1¾″ flat head screws. Suitable sealing compounds are often marked: "Contains Thiokol polysulphide base."

The after bottom plywood is attached first. It will be necessary to butt lengths of plywood together to make up the full length of the bottom; use ¾″ plywood backing blocks between the battens along the butt joints. Coat adjoining faces of plywood and framing with glue, clamp the wood in place, and fasten with 1″ #8 flat head screw spaced about 2″ apart. Secure the forward bottom plywood in the same manner, slitting the extreme fore end of the plywood so that it will bend readily over the stem.

Side panels are attached next; the after sides first. Lay a piece of corrugated cardboard in place on the after sides, and mark the shape on the cardboard. Cut the cardboard to size with a pair of tin snips or heavy shears, and use it as a pattern for the plywood. Cut out the plywood, and fasten to the after sides in the same manner as the bottom panels.

Make up a similar cardboard pattern for the forward panels. These can be cut slightly oversize from the plywood, as it will take some careful trimming and fitting in order to have the side plank assume a 3 degree lift at the chine.

Note that these forward panels are installed *before* the forward chine members. The chine members are made of three layers of ¼″ plywood glued together. They are cut to shape, rather than bent. With the forward side panels in place, fastened to the sides of the stem plate, you can use cardboard to get the shape for the chines. When the chine members are made up, they

(Text continues on page 87)

CAB-OVER HYDRO.

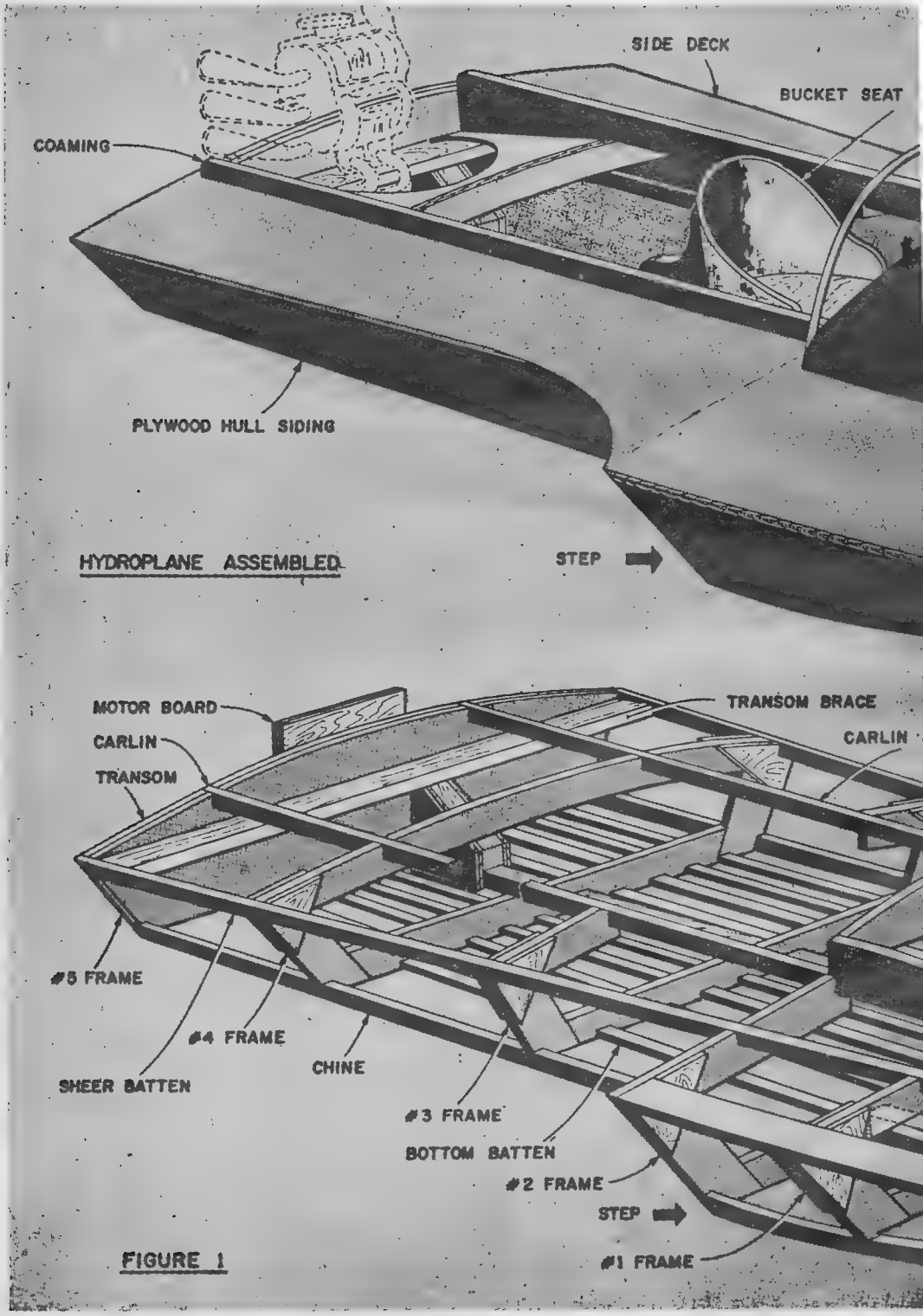
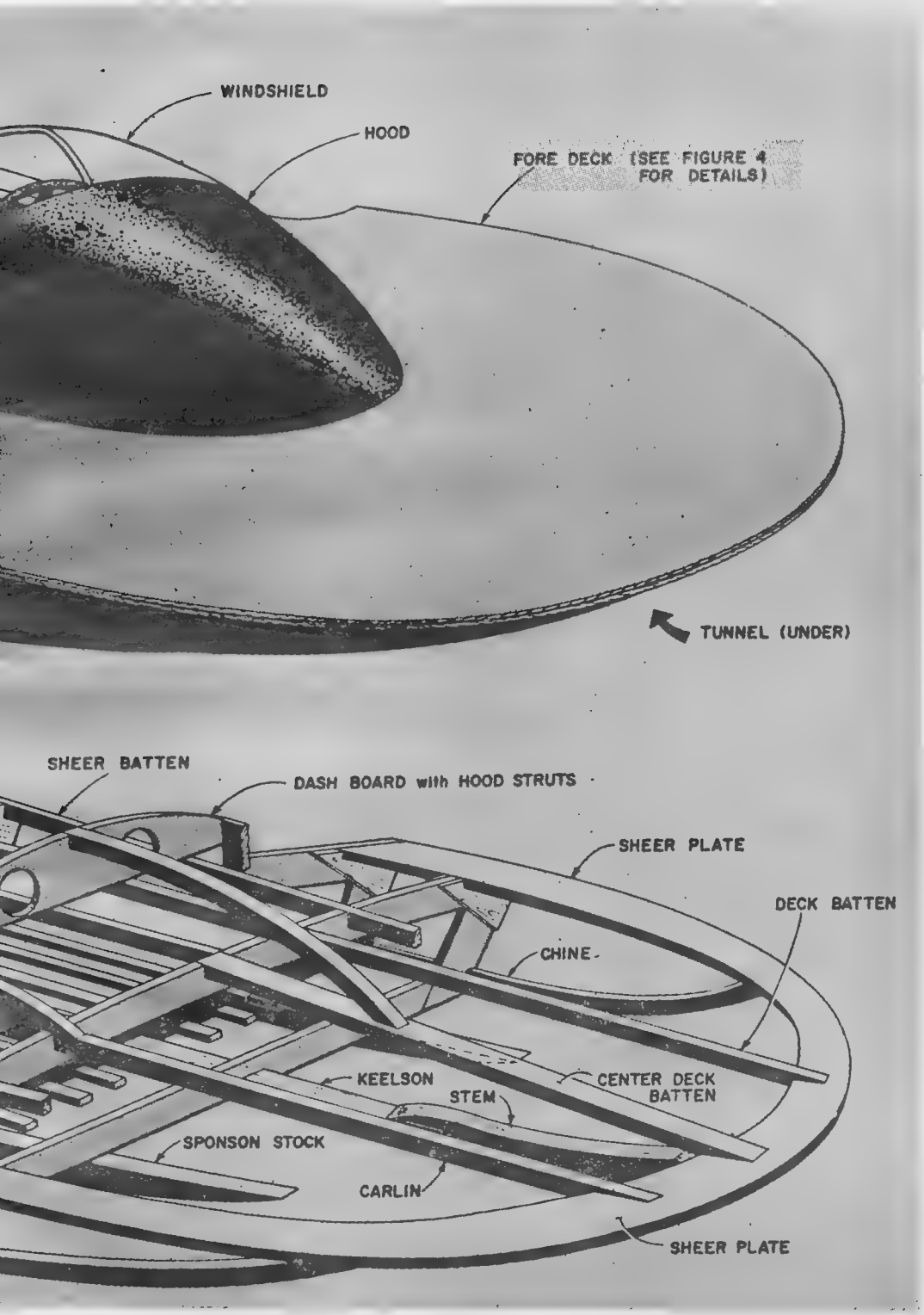


FIGURE 1


WINDSHIELD
HOOD
FORE DECK (SEE FIGURE 4 FOR DETAILS)
TUNNEL (UNDER)
SHEER BATTEN
DASH BOARD with HOOD STRUTS
SHEER PLATE
DECK BATTEN
CHINE
KEELSON
CENTER DECK BATTEN
STEM
SPONSON STOCK
CARLIN
SHEER PLATE

CAB-OVER HYDRO.

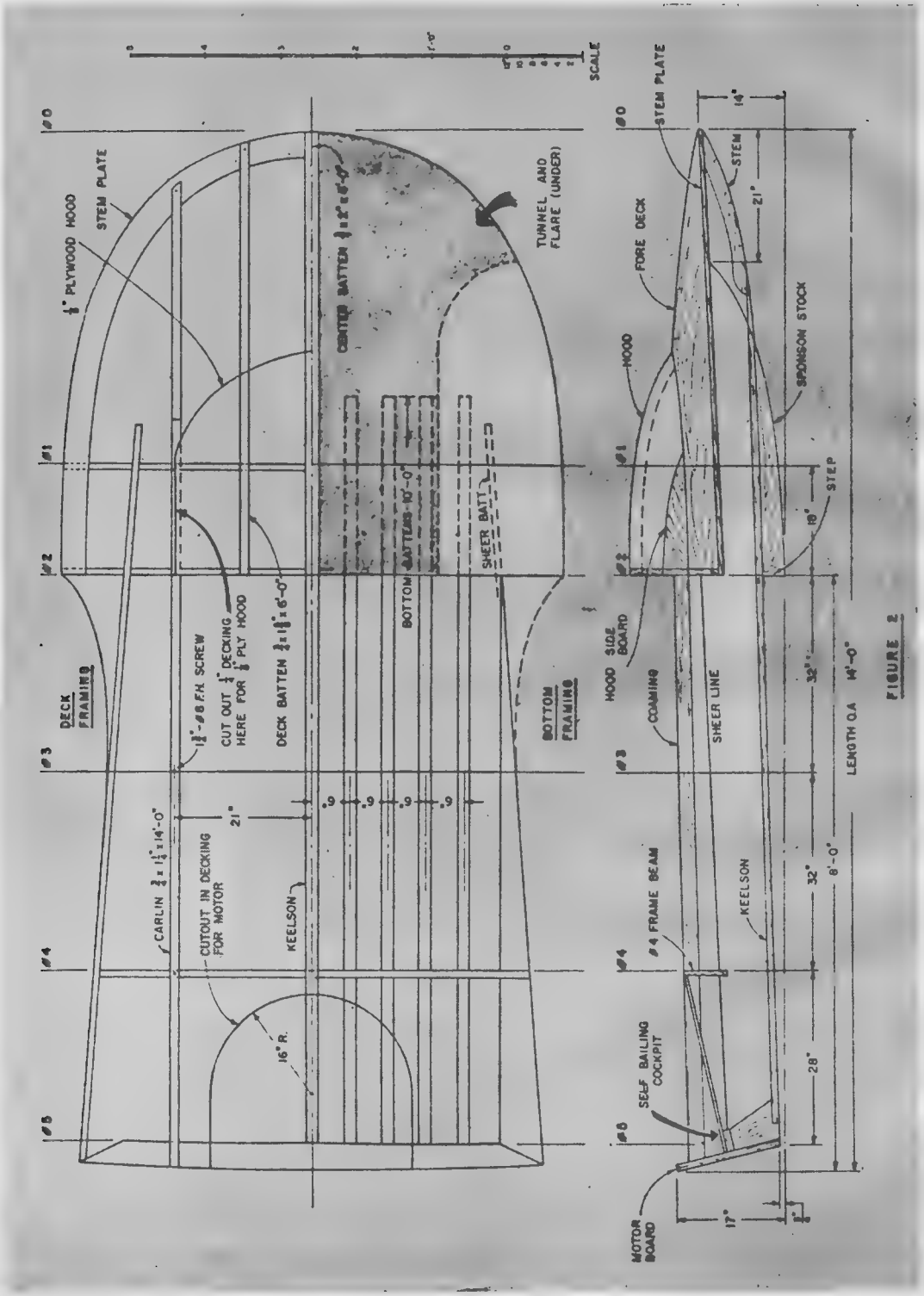


FIGURE 2

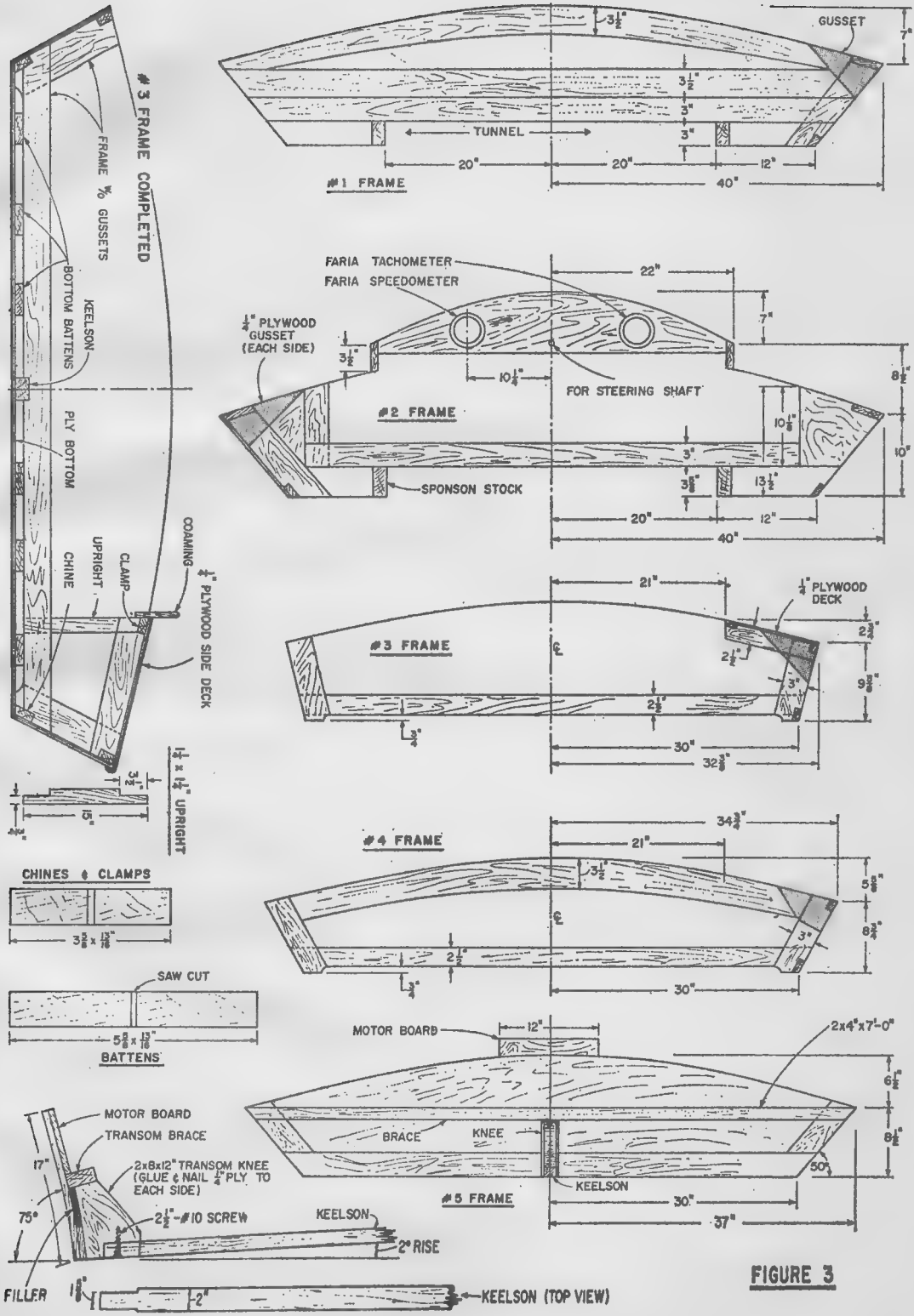
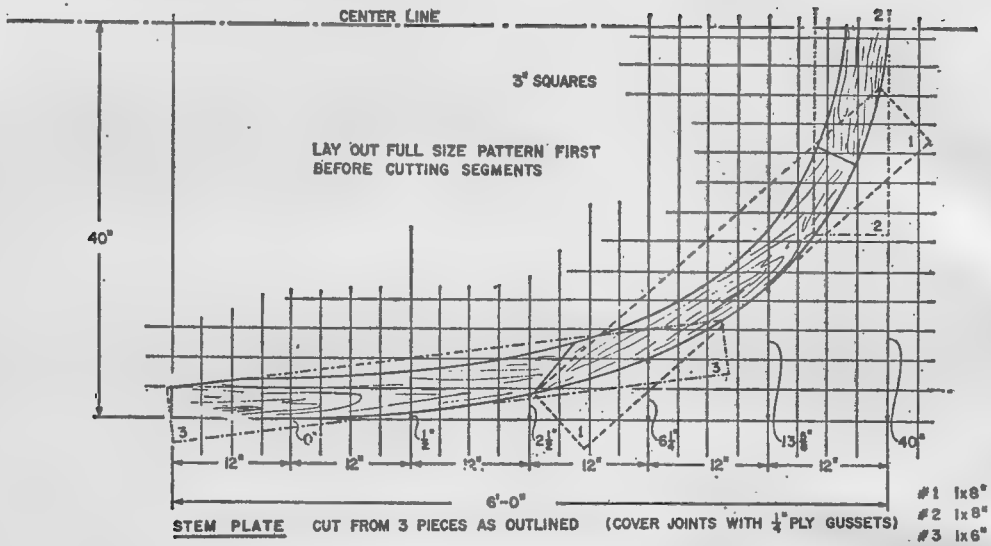
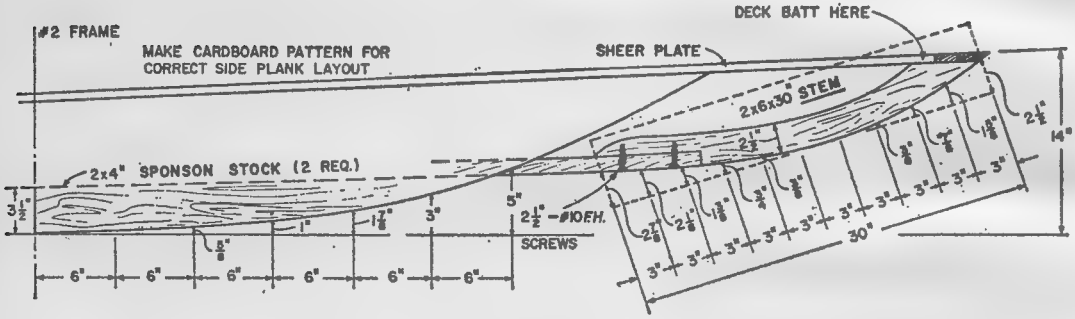
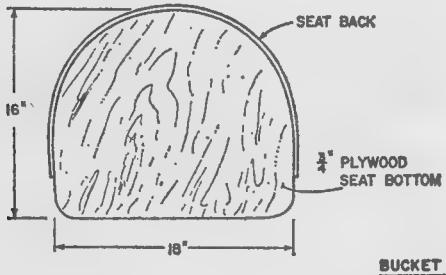

#3 FRAME COMPLETED
FRAME ⅜ GUSSETS
BOTTOM BATTENS
KEELSON
PLY BOTTOM
CHINE
UPRIGHT
CLAMP
COAMING
¼" PLYWOOD SIDE DECK
1½ x 1½" UPRIGHT
CHINES & CLAMPS
SAW CUT
BATTENS
#1 FRAME
GUSSET
TUNNEL
20"
40"
12"
#2 FRAME
FARIA TACHOMETER
FARIA SPEEDOMETER
¼" PLYWOOD GUSSET (EACH SIDE)
FOR STEERING SHAFT
SPONSON STOCK
22"
#3 FRAME
¼" PLYWOOD DECK
21"
30"
#4 FRAME
34¾"
#5 FRAME
MOTOR BOARD
TRANSOM BRACE
2x8x12" TRANSOM KNEE (GLUE & NAIL ¼" PLY TO EACH SIDE)
2½"-#10 SCREW
KEELSON
2° RISE
FILLER
KEELSON (TOP VIEW)
BRACE
KNEE
2x4"x7'-0"
50°
37"

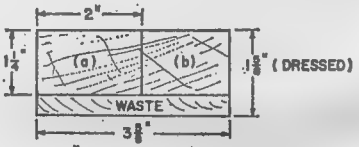
FIGURE 3

CAB-OVER HYDRO



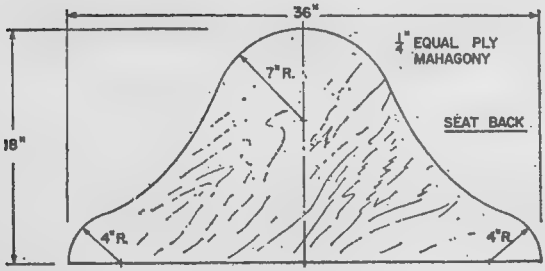






2x4" 12 FT. LENGTH CUT UP FOR
a) KEELSON
b) UPRIGHTS

BUCKET SEAT



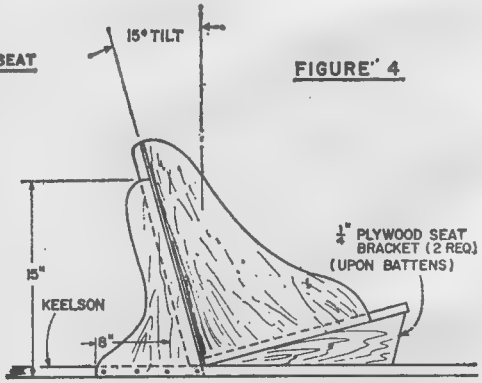


FIGURE 4

are placed in position, and the side panels are fastened to them with 1″ #8 flat head screws.

Figs. 2 and 4 show how the two tunnel sides are shaped from a 2x4x6′, and how they are given a 3 degree lift. The tunnel sides are fastened to the bottom plywood with 1¾″ #8 flat head screws started from the underside of the plywood. Be sure all mating surfaces are coated with a good sealant. The tunnel bottom panel, of ¼″ plywood, is cut to shape. Again, you can use corrugated cardboard to make up a pattern. Secure the panel in place with 1″ #8 flat head screws.

To complete the hull planking, shape the after plane bottom planks to fit, and install with 1″ #8 flat head screws after coating chines with a sealant. To trim and fair plywood edges along the chines, use power sander with a coarse grit paper. This will sand off excess rubber sealant.

It is suggested that an extra pad of plywood be glued and screw fastened on each side of the sponsons forward to strengthen them. The pads should be about 24″ long. Then the plank edges along the chines can be covered with 4″ width fiberglass tape and resin.

Deck carlins extend from the transom to the stem, as shown in Figure 1. They are notched into the frames, but lapped over the stem. Fasten at each joint with 1¾″ #8 screws. Deck battens are notched flush into the deck framing.

The self-bailing cockpit is made up of ¼″ plywood for the bottom, and ¾″ stock for the sides. Provide a cutout in the ¼″ plywood decking for the motor. Glue coat both the framing and decking along mating surfaces, and fasten the decking in place with 1″ #8 ringed nails. See Figure 1 for hood and dash board details. ■

MATERIALS LIST

Keelson	1—2x4x14 (use waste to make frame uprights)
Bottom Battens	4—1x6x10′ (cut two widths, makes 8 pieces)
Sheer Battens	1—1x4x10′ (cut two widths, makes 2 pieces)
Chines	1—1x4x10′ (cut two widths, makes 2 pieces)
Deck Beams	4—1x8x8′
Deck Battens, Sea Framing	2—1x4x8′ (cut as needed)
	1—2x4x8′
Framing	6—1x4x8′
Stem	1—1x6x10′
Bow Plate	1—1x8x10′
Sponson Framing	1—2x4x8′
Carlins	2—¾″x1¼″x14′
Self Bailing Well Framing	Waste from above lumber
Bottom, Sides, Dec	8—¼″x4′x8′ plywood
Cowl	1—⅛″x2′x4′ plywood
Transom	1—¾″x18″x80″ plywood

FASTENINGS

2 Doz. 2½″ #10 flat head screws
6 gross 1″ #8 flat head screws
6 gross 1½″ #8 flat head screws
1 gross 1¾″ #8 flat head screws
2 lbs. glue
1 qt. butyl rubber caulking sealant

• To obtain enlarged plan for building Cab-over Hydro, Craft Print No. 363, see handy order form on last page of this issue.

REBEL

Designed by
Glen L. Witt

DIMENSIONS	
Length overall	14'10"
Beam	6'4"
Hull depth forward	25"
Depth at transom	20"
Approx. weight	400#
Power	30-80 hp

Here's a speedy ski boat you can build from a kit or from plans. Construction is relatively simple if you use the supplied frames

☐ The Rebel is a modern outboard runabout of the "ski boat" type. It is designed for high speed use, and its cowl type of forward deck eliminates the need for a windshield. It also has flaring anti-trip chines that provide a safety factor in turning, and also tend to smother much of the spray around the transom area.

Construction, using the frame kit that's available, is relatively simple, but this is not a boat recommended for a beginner's job. A building form is necessary, which must be set up as shown on the plans that come with the kit. It is important that the base member of the form be anchored to the floor so that it will not move around when the various members are assembled on the form.

When the form is completed, mount the frames on it bottom side up. After they are accurately spaced, center them carefully as shown in Photo 1, and anchor them rigidly to the form with temporary screws, or clamps. Be sure to adjust for any minor discrepancies in alignment by wedging the frames slightly.

The position of the transom is obtained after installing the keel, which is allowed to extend aft from frame #4 in a straight line. The transom knee, butted to frame #1, will space the transom properly. Block the transom with braces so it is held on its outer extremities, and is spaced equal distances at the chine points from frame #1.

Install the chine blocking and breasthook to the stem, using 2″ #10 screws after coating mating surfaces with glue. The heel of the stem is butted to the floor timber at frame #5, and is fastened in place with 2″ #10 screws. The entire assembly is then mounted on the building form, taking care to follow the dimensions given in the plans. After the entire structure has been carefully aligned, block and clamp it securely in place.

The keel is made up of a single length of oak, spruce, or mahogany 1″ x 4″ plank, laminated on the inside with ⅜″ or ¼″ plywood to prevent splitting. The plywood lamination need not be full length; use simple butt joints (which must be between frames) if necessary. Glue the plywood lamination to the keel, and nail with 1″ annular ring nails spaced 6″ apart. Use caution in placement of nails, as the points may cause trouble when the keel is beveled to accept the bottom planking.

Install the keel to the frames with 2″ #10 screws, after countersinking ¼″ for the screw heads. Be sure mating surfaces are coated with glue. Bolt the keel to the stem and transom knee with two 5/16″ carriage bolts. Again, countersink the heads to allow for fairing.

Chine logs are made up full length of 1″ x 2″ oak, mahogany, or spruce. Bevel the chine notch at each frame so the chine log will lie flat against it. At the stem, hold the chine log against the chine block, and trim off the end, using the stem itself as a guide to ensure a proper fit.

Fasten each chine log at the stem block with a single 2″ #10 screw driven at an angle that will allow it to make contact with the stem itself. Spring the chine log around the hull framework, fastening it to each frame with a single 2″ #10 screw.

Note: there may be considerable tension

Photo 1. Frames are spaced on building form and checked for alignment. Note the stem assembly bolted to frame #5, and notch in stem that takes notched chine block shown resting on form below stem.

at frame #5, so the screw at this frame may be eliminated until *after* the planking has been applied. Then the screw can be driven through the planking and chine into the frame. This will often prevent cracking of the chine log at this stress point.

Also, install both chines at the same time. Fasten both at the stem, then frame #4 on both sides, and at each successive frame on both sides. If a chine log is installed completely along one side before the other is started, the framework may be warped out of alignment.

Use oak or mahogany 1″ x 2″ stock for the anti-trip chines, and install them. They extend from the transom to a point just forward of frame #4, and they must be tapered to match the chines along the forward edges. Fasten with a 2″ #10 screw at each frame, after coating mating surfaces with glue.

Sheer clamps are made up of two laminations of ⅝″ x 1¼″ mahogany or spruce. These are installed vertically from amidships forward; aft of amidships they take a twist to allow material for fastening both side planking and decking. They cannot be similarly twisted forward. Bevel all frame notches so the sheer clamps will lie flush in them.

In assembly, angle the first lamination to match with the stem-breasthook junction, and screw into place with several 2″ #10 screws after coating mating surfaces with glue. Spring into place around the rest of the frames, fastening at each with annular ring nails. As with the chine logs, install the clamps on each side at the same time to avoid twisting the framework.

Next apply the outer sheer clamp laminations. Coat mating surfaces liberally with glue, and fasten with 2″ #10 screws through both laminations into the frames. Clamp the laminations together in the intervals between frames until the glue has set.

Install the 1″ x 3″ bottom battens. These rest on top of the frames and transom. They need not extend all the way forward to meet the chines, but should be run as far forward as possible. It may be necessary to vary the spacing between battens slightly from frame #3 forward in order to allow them to take a natural curve, and it is advisable to kerf the battens, particularly those closest to the keel, back to a point just forward of #3 frame. (See Fig. 1.)

Fasten the battens with a single 2″ #10 screw at each frame, but omit those at the forward frame until *after* bottom planking is applied. This will enable the kerfed area

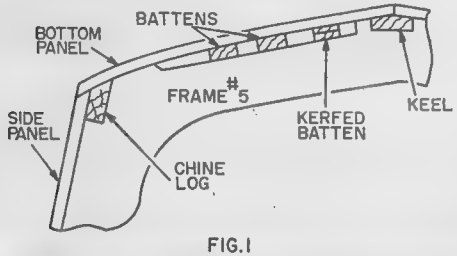
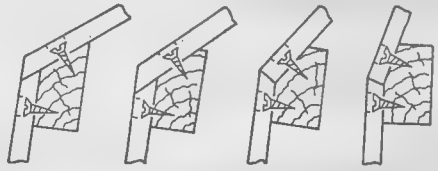


FIG.1



CHINE LOG BETWEEN FRAME #5 AND STEM

FIG.2

Photo 2. Completed framing is faired to take side and bottom planking. Horizontal cuts (kerfing) through the stringers nearest keel can be seen. Kerfing allows the stringers to bend more naturally when bottom planking is applied.

to take a more natural bend.

The transom capping member is the final part of the framework to be assembled. It is applied flush to the bottom of the battens. It caps the gaps between battens and the transom and also provides a solid bearing for the bottom planking. The bottom surface must be beveled 12 degrees to accommodate the bottom planking. Fasten the capping member to the transom with 1½″ #8 screws.

Now all the framework must be faired so that planking will lie flush against all members. Use a wood rasp on chine logs and sheer clamps where they pass through frame notches to fair these members with the frames at these points. Then use a plane to fair the chine logs and sheer clamps in the areas between frames, see Photo 2. Use a small piece of plywood, or a thin batten, to check your work. Keel and stem are faired in a similar manner, again using a flexible batten or small piece of plywood.

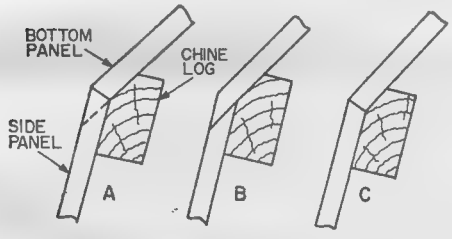
Use a long straight edge, and draw a line along the side of each chine log from the point at frame #5 where side and bottom panels meet, to the mid-point of the chine log at the point where it meets the stem. Fair the chine log as shown in Fig. 2 to accept both side and bottom panels.

A single length of ¼″ marine or exterior grade plywood is desirable for each side panel, but shorter lengths can be used if the sections are butted along a backing block at a point between frames. Clamp the plywood to one side, or sink several screws to hold it in position, and mark it roughly around the sheer clamp, transom, chine log, and stem. Remove the panel and cut it roughly to shape.

Re-apply the panel, and re-mark and re-cut it as necessary to make it fit. Particular care must be taken with the fit along the chine between frame #5 and the stem; at other points the panel can be planed fair after final installation.

Remove the panel and check it for fit on the opposite side of the boat. It can then be used as a pattern for marking the second side panel. Re-install the first panel, screwing it permanently in place with 1″ #8 screws spaced about 2″ apart along chines, transom, sheer clamp, and stem. Screws are not needed along the frames, although these points, as all other mating surfaces, are coated with glue. Fair the panel to the chine log; be sure to note that at the stem the second side panel will lap the first. Install the second panel in the same manner as the first.

Before bottom panels are installed, fair



A-SECTION AT LAP/BUTT JOINT TRANSITION POINT
B-LAP JOINT AFT OF TRANSITION POINT
C-BUTT JOINT FORWARD OF TRANSITION POINT

FIG. 3

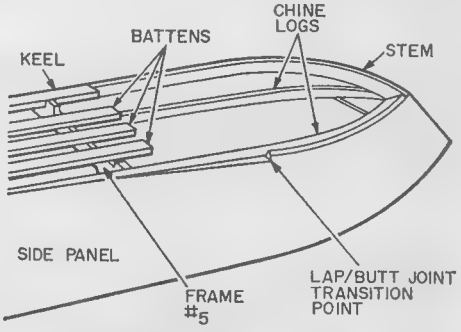


FIG. 4

Photo 3. Second bottom panel is fitted in place before trimming to fit along its side panel. Transition joints in this and in bottom to side panel seam at left can be clearly seen.

the side panels forward of frame #5 for a lap joint to a point about 15″ ahead of the frame. From this point forward, side and bottom panels will meet in a butt joint, as shown in Fig. 3 and Fig. 4.

Use ⅜″ marine or exterior grade plywood for bottom panels; single lengths are best but shorter lengths can be used with butt block joints between frames. In this case the butt blocks must be inserted between the battens.

Installation is in the same manner as for the sides. Clamp one panel in place, and mark for the rough cut. Be sure to align a long straight edge of the panel along the centerline of the keel, and use a few screws to keep it from shifting. In the final fitting of the forward area, it's a good idea to soak a couple of burlap bags in boiling water, then spread them over the plywood to make it easier to bend. Ahead of the point where the transition is made from lap to butt joint, trim the panel carefully, a little at a time, and fasten the panel with temporary screws through 2″ square plywood blocks as you work your way forward. These blocks will help spread the stress, and will bring the bottom panel down flush with the side panel. Finally, add the permanent fastenings of 1″ #8 screws spaced 2″ apart after all temporary fastenings have been removed, and all mating surfaces coated with glue.

Apply the second bottom panel in the same manner. Note that a transition is made from a butt joint along the keel to a lap joint along the stem. See Photo 3.

Next install the anti-trip planking. This is butted to the bottom planking on each side of the hull, and laps over the side planking. Of course it is planed flush with the sides after it is fastened in place. Fill all screw head holes in all panels with wood putty, and sand flush with the plywood after the putty has hardened.

If the hull is to be fiberglassed, this is the time to do it. It is recommended that fiberglassing be done if fir plywood is used for bottom and side panels, as this prevents the checking that often occurs with this type of plywood. Carefully follow the instructions provided by the manufacturer of the resins and catalysts used.

After fiberglassing, the hull can be turned right side up and blocked level. Now trim the edges of the side panels flush with the sheer clamps. Install the intermediate deck beam; this should be cut from 1″ mahogany or spruce, although ¾″ plywood can be used. Screw the blocking to the sheer clamps on

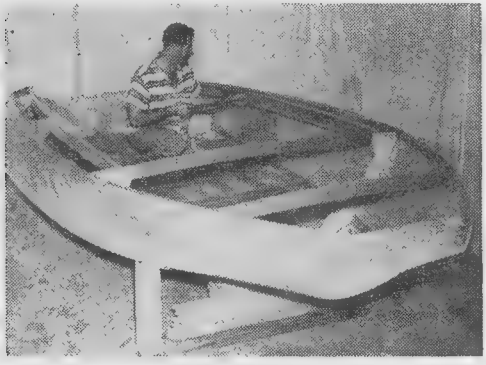
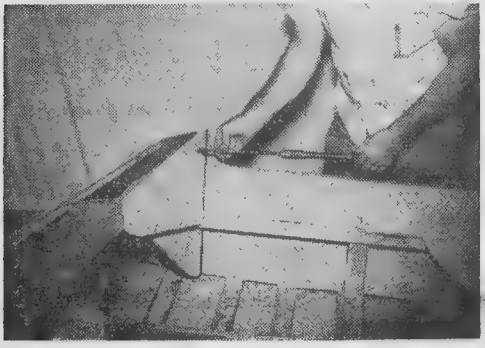


Photo 4, left. Fastening side deck carlings in place. Note how the intermediate deck beam is fastened to blocks, which in turn are screwed to the sheer clamps.

Photo 5, below left. Sides of self-bailing motor well are made from scraps left over from hull planking.

Photo 6, below. View of transition joint from lap to butt aft of frame #1. Use a medium wood rasp, followed by sandpaper, to fair deck into the tumblehome of the sides along the butt joint.



each side of the hull, and screw the beam to the blocking with 1½″ #8 screws.

Next the carlings, the longitudinal members that form the sides of the cockpit, are sprung into position as shown in Photo 4. They are screw fastened at the transom, each of the frames, and at the frame #5 deck beam. Now fair the carlings, sheer clamps, and side panels so the side decks, when installed, will lie flush against all members. Be sure to eliminate any bumps or hollows.

Bevel the athwartships 2″ x 4″ member to mate to the transom, and fasten it in place over the transom knee. Then form the motor well tray with side members that extend from the top of the carlings back and down to the transom motor board, plus a motor well tray that is screwed to side blocks and the athwartships member. See Photo 5.

To complete the topside framing, install the battens and strongback that go under the foredeck. These are notched into the deck beams and the strongback into the breasthook as well. The strongback must have a clean, even sweep that ends at the tip of the stem.

Plywood is used for the decking, and it is installed in the same manner as side and bottom panels. Clamp it in place, mark for cutting, and cut to rough size. Re-install and mark for any additional cutting needed, and trim to fit. At the junction of the forward decking and aft decking, a butt block is used —under the decking, of course. Note that a transition joint is needed near the transom; this comes at frame #1. See Photo 6. Carefully trim all deck overhangs along the sides. Fasten decking with 1″ annular ring nails.

Coamings are fitted to the lower edge of each carling. These extend from the motor well forward to the frame #5 deck beam. Cut the forward beam for the cowl to the same crown as the frame #5 deck beam, and install it flush with the top of the deck beam. Be sure to notch it first for the cowl strongback.

Next install the dash beam and cowl beam to the coaming with side blocks in the same manner as the intermediate deck beam. Notch each for the cowl strongback, and screw this into place with 2″ #10 screws. The cowl covering panels then butt to the foredeck, and fit into rabbets provided along the coaming and dash beam. See Photo 7.

Floorboards are an optional feature, but can be made up of ⅜″ plywood installed over the bottom battens. Any type of seating arrangement suitable to a hull of this size can be installed.

After giving the finished boat the paint and varnish job of your choice, you are ready to fit engine and controls, and to enjoy many hours of happy boating. ■

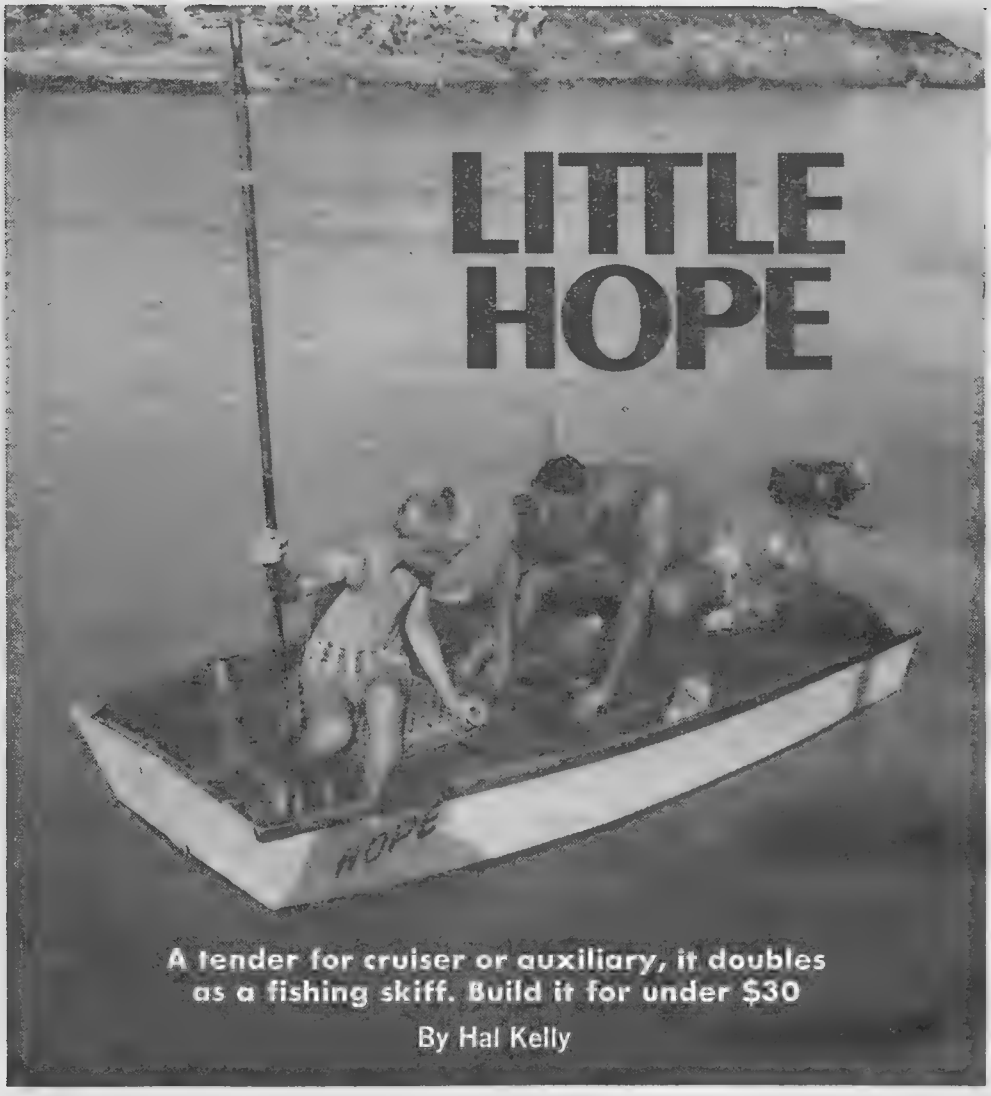
Photo 7. Cowl panels butt against after edge of the foredeck. This cowl eliminates the need for a windshield, although such a unit could be added if desired. Screw holes along deck edges are filled with wood putty, then sanded flush before varnish is applied.

Frame kit for building Rebel with complete plans is available from Glen L. Marine Designs, 9152 E. Rosecrans, Bellflower, Calif. 90706 for $95. Complete plan sets, and plan sets with full-size patterns for stem, chine blocking, breasthook, transom knee, and frames, are also available at $9 and $18 respectively.

BILL OF MATERIALS

Quan.	Size and Description	Use
	40 bd. ft. Random widths & lengths, oak mahogany or spruce	Frames, four quarter material*
1	¼″ x 3′ x 8′ plywood	Frame gussets, keel laminations*
1	¾″ x 4′ x 8′ plywood	Stem, transom, breasthook, chine block, transom knee*
2	¼″ x 3′ x 16′ plywood	Side planking
2	⅜″ x 4′ x 16′ plywood	Bottom planking, anti-trip planking
1	1″ x 4″ x 14′ oak, mahogany or spruce	Keel
2	1″ x 2″ x 16′, oak mahogany or spruce	Chine logs
4	⅝″ x 1¼″ x 16′ oak, mahogany or spruce	Sheer clamps
6	1″ x 3″ x 11′ oak mahogany or spruce	Bottom battens
2	1″ x 2″ x 8′ oak, mahogany or spruce	Anti-trip chines
2	1″ x 2″ x 6′ oak, mahogany or spruce	Deck battens
1	1″ x 3″ x 7′ oak, mahogany or spruce	Strongback
2	1″ x 4″ x 10′ oak, mahogany or spruce	Carlings
3	1″ x 4″ x 6′ oak, mahogany or spruce	Intermediate deck beam, cowl beams
1	1″ x 8″ x 5′ mahogany	Dash beam
1	1″ x 7″ x 9′ mahogany	Coamings
2	¼″ x 4′ x 8′ Douglas fir or mahogany plywood	Decks
1	2″ x 4″ x 4′ Douglas fir	Athwartships brace
1	1″ x 3″ x 4″ mahogany	Motor well beam
	Scrap plywood from planking	Motor well bottom and sides
6	5/16″ x 5″ carriage bolts	
2 gross	¾″ #8 flat head wood screws	
4 gross	1″ #8 flat head wood screws	
1 gross	1¼″ #8 flat head wood screws	
1 gross	1½″ #8 flat head wood screws	
1 gross	2″ #10 flat head wood screws	
8 only	3″ #14 flat head wood screws	
3 lbs.	1″ #12 bronze or monel annular thread nails	

Resorcinol or urea type glue
*Members furnished in frame kit



A tender for cruiser or auxiliary, it doubles as a fishing skiff. Build it for under $30

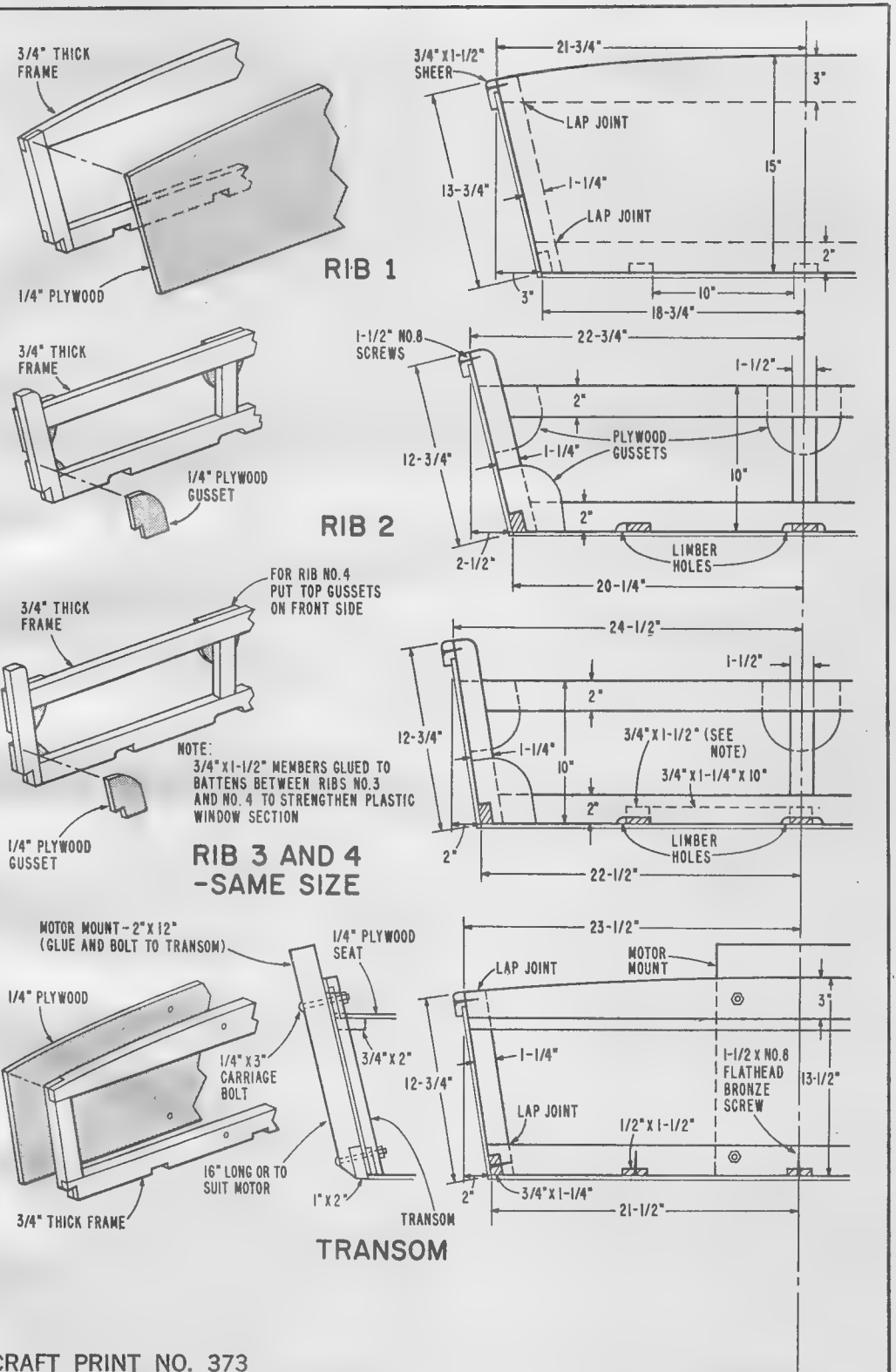
By Hal Kelly

Little Hope is a lightweight pram designed for oar power, or a modest outboard of not more than three horsepower. The boat is an ideal tender for a cruiser or auxiliary; it's a good fishing skiff, too, with the Plexiglas panel in the bottom that let's you spot the fish.

Simple construction uses marine or exterior grade plywood over solid frame members. If you use the cheaper exterior grade ywood, the money saved will cover the of fiberglassing the bottom. In either your total cost for materials should ler $30.

by setting up a jig, which is nothing than two parallel 2″x2″ members cross braced at each frame station. The jig can be set up right on a level floor, but raising it on concrete blocks will provide a more comfortable working height.

As can be seen in Fig. 1, the jig cross pieces extend well out past the parallel members, and that frame side pieces are left long enough to be clamped to these cross pieces. At the bow and transom stations, the cross pieces must be angled, at 30° and 14° respectively, to the perpendicular in order to provide proper alignment of the bow and transom. Or you can just cut the angles in the cross pieces at the points where the frame extensions will be clamped.



CRAFT PRINT NO. 373

LITTLE HOPE

Fig. 1, left. Ribs are set up on the jig. Note extra length of frame sides fastened to jig cross pieces. Later they'll be trimmed flush with sheer clamps. Fig. 4, above right. Bottom battens and chines are in place. Bottom battens are beefed up between ribs #3 and #4 to support glass windows.

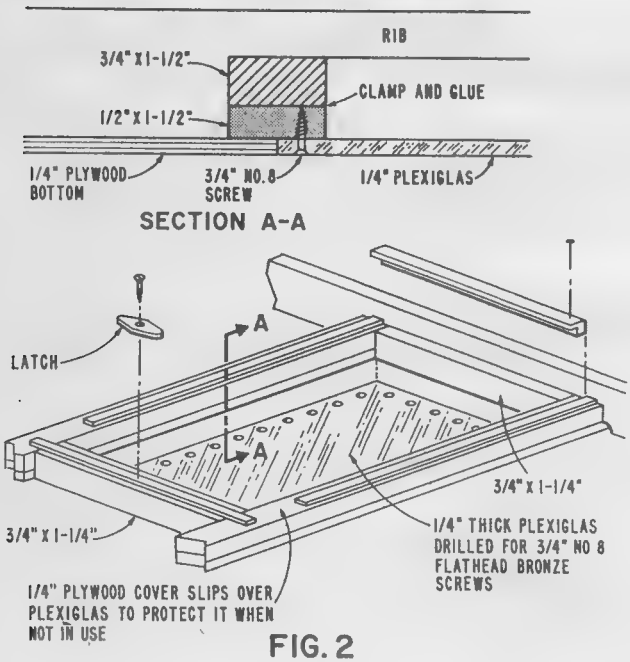


FIG. 2

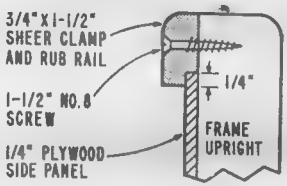


FIG. 3

You can use ¾" white cedar stock for the framing, but straight grained fir is adequate and more easily obtained. Make up full-size patterns on builder's paper or wrapping paper. Make them up for just half of each frame; draw one half on the stock, then flop the pattern to draw the other half.

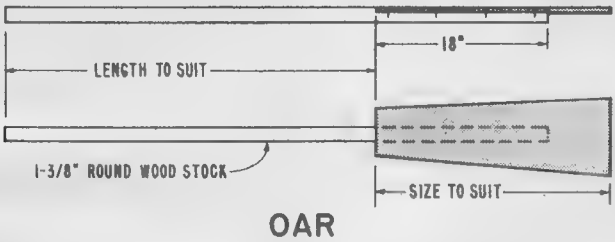
Note that bow and transom frame members are half-lapped at the corners so plywood panels will lie flush against the framework. Be sure to notch for battens and chines before installing these panels. Use butt joints backed by ¼" plywood gussets on all other frames. You can use ¾" bronze #14 boat nails to fasten plywood panels and gussets, after coating mating surfaces with glue.

When the frames are assembled, notch for battens and chines; make the notches wider so the extra space will act as limber holes through which water can drain. Mount the frames on the jig, and align them carefully. They must be centered exactly, per-

Fig. 5, above left. Cut ¼" deep notches in battens near transom so any water in boat can be made to settle in one corner for easy bailing. Note 1" x 2" cross member, motor mount, installed as shown on plans. Height of motor mount depends upon motor; 16" is normal. Fig. 6, above right. Plywood sides are glued, nailed to sheer which in turn becomes rubstake. Fig. 7, right. Window framing, seat braces are shown. Interior's painted before seats are installed to reach corners otherwise inaccessible.

BILL OF MATERIALS—LITTLE HOPE

Quantity	Size	Material
3	¼" x 4' x 8'	Exterior or marine grade plywood
3	¾" x 12" x 8'	White cedar or clear fir. Cut to proper widths for battens, ribs, etc.
1	5 lb. can	Wilhold marine glue, or equivalent
100	1½" #8	Bronze flat head screws
1 lb.	¾" #14	Bronze boat nails
2 qts.		Paint or varnish



OAR

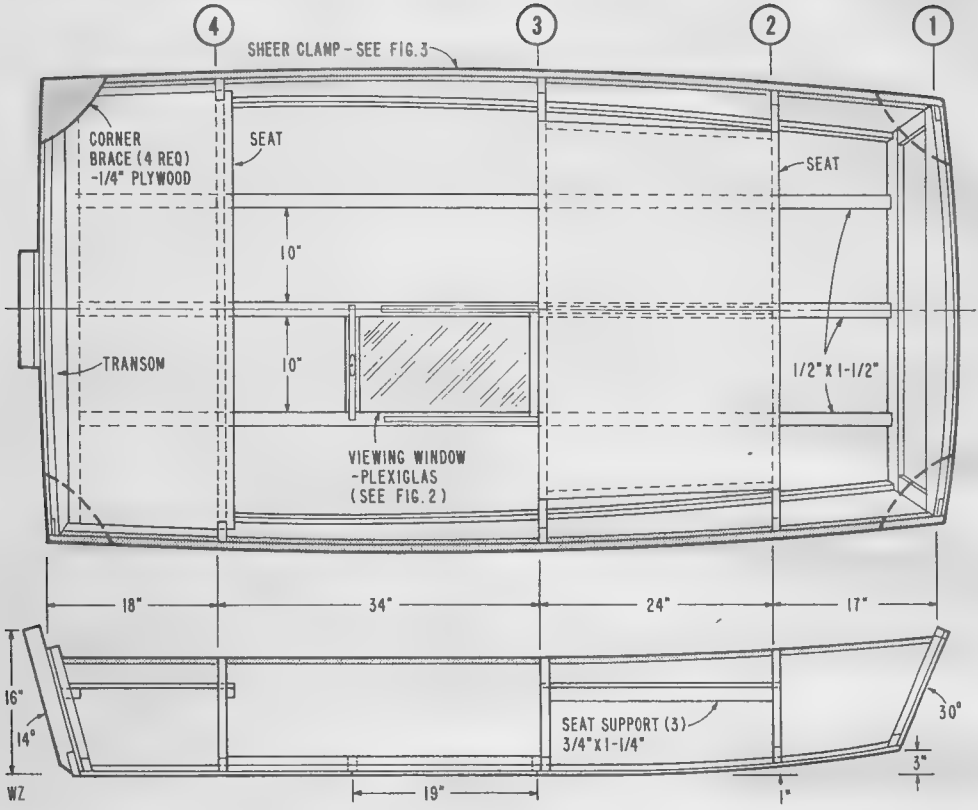
pendicular to the jig (except for bow and transom), and square with the centerline.

Install the three bottom battens, then the chines, using glue and 1½" #8 bronze flat head screws at each joint. You can make up full-size patterns for the plywood side panels, or clamp uncut panels in place and trace the outline. In either case, the sheer should be cut exactly to size; ends and chine edge can be left slightly oversize for trimming after installation. Use glue and ¾" bronze #14 boat nails to attach the sides to the framework.

Make up and install the framework that will take the Plexiglas bottom panel. See Fig. 2.

Cut the plywood bottom panel to size, and temporarily fasten it in place with one screw in each corner. On the inside, mark the outlines of all frames, battens, chines, and Plexiglas panel framing. Remove the panel, cut out the opening for the Plexiglas, and drill pilot holes for all nails. These should be spaced about 3" apart

LITTLE HOPE



along chines, bow, transom, and around the window. Space them about 6″ apart along battens and frames. Coat mating surfaces with glue, then reinstall the bottom panel, hammering ¾″ bronze #14 boat nails through the pre-drilled holes. Because the battens will have some spring, have a helper under the boat hold a heavy weight against them from inside so you will have something solid taking the hammer blows.

At this point, you can fiberglass the bottom, if desired.

Now drill and countersink screw holes in the Plexiglas window panel. Apply bedding compound around its edge, and screw it in place.

Next, remove the hull from the jig, turn it over, and place it on a pair of padded saw horses. For this boat, sheer clamps are rabbeted as shown in Fig. 3, and attached to the outside of the planking panels. This is the reverse of the usual procedure, but the sheer clamps double as rub rails, and they also provide a protective covering over the exposed edges of the plywood side panels. Now trim the frame ends flush with the sheer clamps.

Install seat braces as shown on the plans, then paint or varnish the hull interior as desired. When the finish is dry, install the seats themselves, fastening them in place with ¾″ bronze #14 boat nails.

About the only hardware needed are oar locks and the bow eye of your choice. You can buy oars, or make up your own easily, as shown on the plans. Use 1⅜″ round wood stock, cut a flat section 18″ long at one end, and glue and nail a ¼″ plywood blade in place. ■

• To obtain enlarged plan for building Little Hope, Craft Print No. 373, see handy order form on last page of this issue.

Eager Eve

By WILLIAM D. JACKSON
Naval Architect

FROM 50 feet away you'd swear that *Eager Eve* was a luxury inboard cabin cruiser. A cover partly hides the outboard motor that drives this efficient cruiser fast enough to keep up with or outrun nine out of ten inboards.

In a test *Eager Eve,* powered by an old Evinrude 25 *hp* motor made 22 *mph* with one person aboard. Without a heavy inboard engine, you can transport it easily on a trailer and store it in a garage.

Eager Eve is built upside down with extensions from the side frames secured to the floor. Nail cross pieces to extensions and mark the centerline on these cross pieces to line-up entire assembly of main frames.

First step is to draw full-size patterns of the stem, the six main frames, half-frames, knees, gussets and floor frames on red rosin paper (available at lumber yards). Mark the material for cutting from the full-size patterns and saw out the pieces to size. This is the spot where power saws will save hours of time. Lay out the parts for frames 1, 2, 3 and 4 on the pattern and glue the gussets in place with resorcinol glue and secure with ⅞ in. #6 *fh* screws. Bolt and glue floor frames at 1, 2 and 3 stations using six 3/16x2 in. *rh* stove bolts to each floor frame. Place washer on both sides of frame bolts. Build up the half frames as you did the full frames, gluing and bolting with three 3/16x2 in. *rh* stove bolts to each joint. Cut station #5 and #6 transoms

Craft Print Project No. 175

USE: Efficient outboard cruiser with motor concealed in a well. May be used for extended cruises upon inland waterways, or sports use at the home harbor for sight seeing or pulling water skiers.

LENGTH: 18 ft.

BEAM: 6' 1" (widest point outside planking.)

DEPTH: forward, 40"; aft, 28"—deepest points

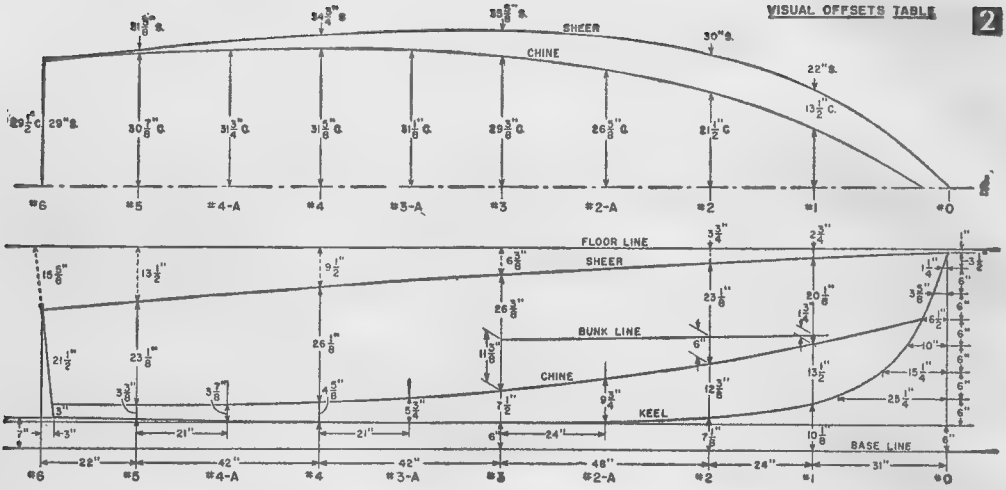
WEIGHT OF HULL: 600 lbs.

CAPACITY: sleeps 2 persons, 4 persons seated with deck chairs.

CONSTRUCTION: ⅜" plywood planking, bottom vee-convex, developable surfaces.

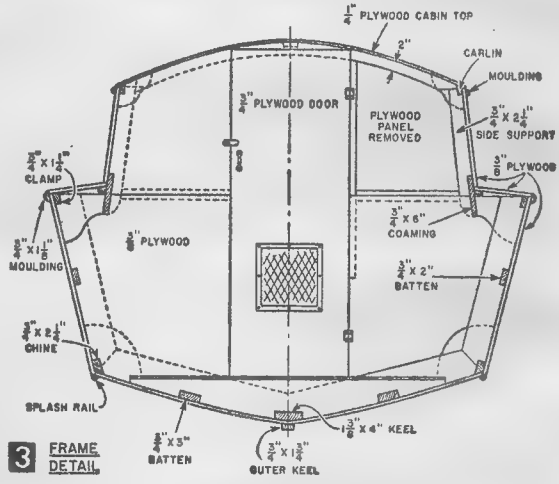
SPEEDS:	Evinrude 28 Speedi-twin or	1 person —22 MPH 2 persons—21 MPH
	Evrinrude 40-HP 2-cylinder Big Twin	4 persons—19 MPH Top Speed 30 MPH two persons aboard.

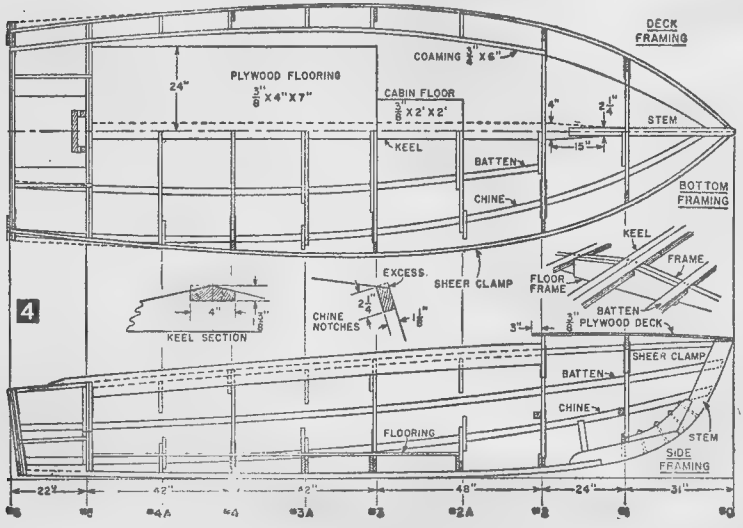
COST:	Cost of Hull	$225.00	Approx.
	Gear Shift and Throttle	50.00	
	Motor	500.00	



from ⅝ in. plywood with framing fastened as shown in Fig. 5. Glue contacting surfaces using a resorcinol glue and screw fastening transom plywood into framing with 1½ in. #8 *fh* screws spaced at 3 in. Glue gussets and screw fasten them with ⅞ in. #6 *fh* screws. Cut opening for the motor in #5 transom but don't cut openings for tilting motor in #6 transom—wait until the entire framing is completed—as explained later.

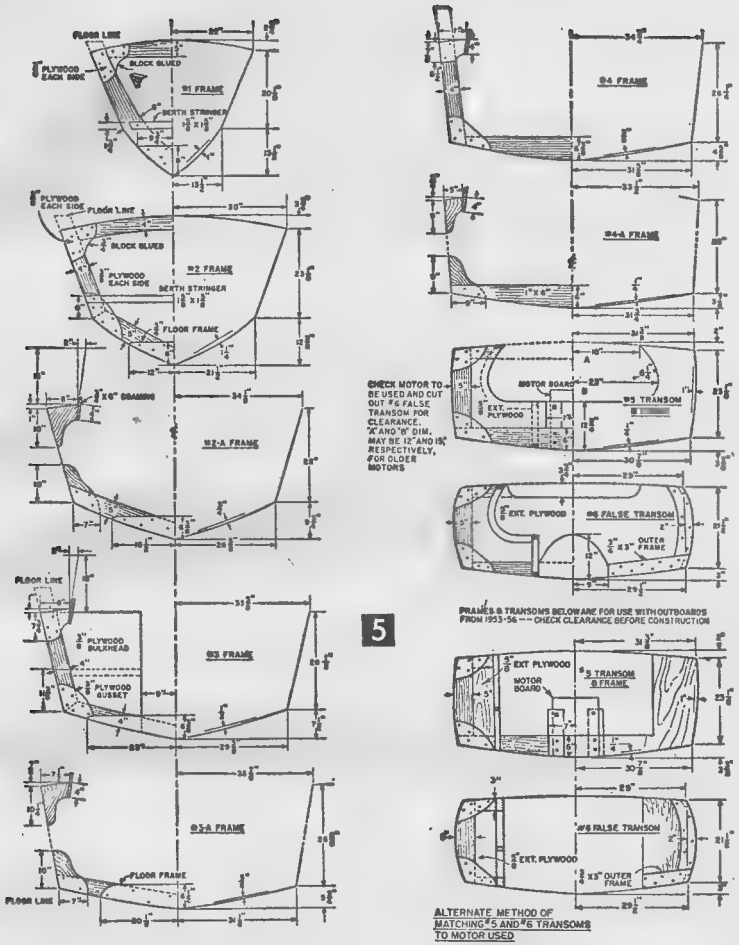
To cut the stem, place the material under the pattern outline, prick-punch the shape through, and saw to shape. The upper and lower stem parts are joined together with a knee. When all parts are fitted coat all contacting surfaces with Kuhls *Seamlast* and bolt together with four 5/16 x 5½ in. carriage bolts, heads flattened and well





countersunk. Glue and screw fasten deck beams to #1 and #2 frames with ⅞ in. #6 *fh* screws. Bolt berth supports in place (Fig. 5) with one ¼ x 2 in. carriage bolt to each joint. At this point notch all frames for keel, chines and sheer clamps.

When the frames are finished, outline on the floor with pencil the proper spacing of frames #1 to #6 and the stem. Leave the half-frames until later. Secure the stem to the floor with two angle irons screwed to each side of stem and the floor (Fig. 1). Nail



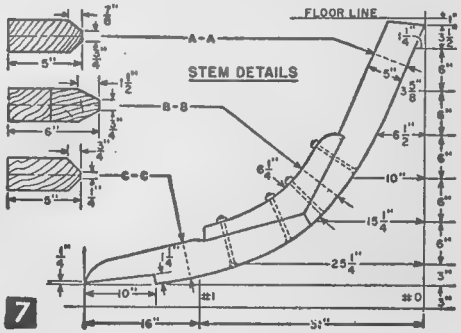
5

motor board.

When the frames are lined up and fastened down, you're ready to clamp the keel into keel notches. If keel notch is too snug, trim the notches to fit. Running a saw alongside the keel insures a good fit laterally. Mark the keel at its fore end to fit stem notch and mark taper on keel as shown in Fig. 2. Remove keel, trim fore end as marked, and replace. Use the keel notch in #6 frame until the entire framing is complete, then saw out the keel aft of frame #5 and the cutout in #6 transom to allow motor to be tilted. Fasten keel to frames and stem with three 2 in. #10 *fh* screws at each joint. First drill lead holes, countersinking for heads of screws and swiping threads of screws over a bar of brown laundry soap for easier entry. With all main frames in place, including #5 and #6 transoms, place half frames with their clamp knees in position, clamp to keel and fasten with two 2 in. #10 *fh* screws to each half frame.

Before fitting chines, cross pieces of each frame to its mark on the floor, being certain that frames are squarely aligned and exactly over center line. A plumb line from keel centerline to floor centerline indicates perfect alignment. When you come to #6 transom, remember it mounts at an angle and should be aligned with the plumb bob. The #5 motor transom is square with base with a beveled spring battens over the bottom, one on each side of keel, ¾ x 2 in. and nail temporarily in place. These battens align and hold half frames in place until the chines are attached. Next step is to spring chines in place. If full length chines are not available, use two pieces, making a butt joint between frames, and reinforcing the joint with a ¾ x 3 x 18 in. batten, glued and screw-fastened in

6 FRAME DETAILS AT STATION #4



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MATERIALS LIST—EAGER EVE

Lumber (Oak or Yellow Pine)

1 pc.	1⅜" x 4" x 16'	Inner keel or keelson
1 pc.	¾" x 1¼" x 18'	Outer keel
2 pcs.	1⅛" x 2⅛" x 18'	Chines
2 pcs.	¾" x 1¼" x 18½'	Clamps
3 pcs.	⅞" x 4" x 10'	Frames, Transom Framing, also Deck Beams
6 pcs.	⅞" x 6" x 12'	
1 pc.	⅞" x 8" x 8'	
1 pc.	¾" x 7½" x 16'	Floor Frames
1 pc.	2¼" x 8" x 8'	Stem
1 pc.	¾" x 13¾" x 6'	Outer Stem
2 pcs.	¾" x 3" x 18½'	Battens-Sides
2 pcs.	¾" x 3" x 16'	Battens-Bottom

Plywood (Fir Exterior Grade D.F.P.A.)

2 pcs.	⅜" x 4' x 14'	Sides
2 pcs.	⅜" x 4' x 5'	
2 pcs.	⅜" x 4' x 14'	Bottom
2 pcs.	⅜" x 4' x 4'	
2 pcs.	¾" or ⅝" x 4' x 6'	Transom #5-#6
1 pc.	⅛" x 4' x 4'	Curved Transom and Cabin Cubby

(Waste Makes Interior Sheathing)

Fastenings

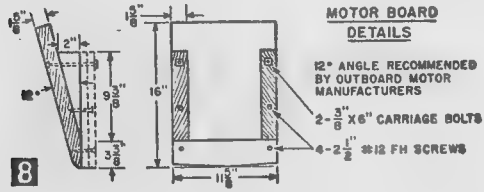
8 gross	1¼" #8 fh. Screws	Planking
2 gross	1¾" #8 fh. Screws	Coaming, Gussets—¾" Clamps
24	2½" #12 fh. Screws	Frames to Keel
6 dozen	2" #10 fh. Screws	Battens and Chines
4 bolts	⅝" x 6½"	Stem
2 bolts	⅜" x 6"	Motor Board
1 qt.	Weldwood or Cascophen Glue	
1 gal.	Kuhls Seamlast (Gray)	Planking Joints

place. Make this butt joint toward aft end of hull. Bevel fore ends of chines to fit stem. Before fastening chines, run a saw alongside at each frame notch to insure perfect contact surfaces. Bend both chines in place working from the fore end and screwfasten with one 2 in. #10 *fh* screw to each joint. Allow chines to extend all the way through #6 transom, and later cover this transom and joint with an outside frame.

If splicing is necessary to fasten sheer clamp into notches, stagger sheer clamp joints near aft part of hull so joints do not fall in same line as jointed chines. Bevel fore ends of clamps to fit stem and spring both clamps around hull at the same time, fastening at each joint with one 1¾ in. #8 *fh* screw, drilling lead holes and countersinking.

Notch the ¾ x 3 in. battens—both sides and bottom flush into frames. Locate battens equidistant between clamps and chines on the sides and equidistant between keel and chines on the bottom. Secure battens with two 1¾ in. #8 *fh* screws at each joint. Bottom battens extend from #2 frame aft to transom, while side battens extend from stem to transom.

Attaching battens completes the framework, so you're ready now to trim and fair all parts of the framework with a jack plane and wood rasp. By laying a light ½ x ¾ in. batten over the joints from keel to chine and over the frames, you can



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9

Cutout in bottom planking for engine well.


10

Lining and frames for engine well partly complete.

quickly note any unevenness. Pay particular attention to fairing keel and chines around area where stem attaches to keel. It may be necessary to remove some of the screws and countersink deeper to adequately fair this area. You'll find a large wood rasp works best when fairing parts around the stem. If rasp scratches your hands, wear an old pair of gloves and you should have no trouble or discomfort.

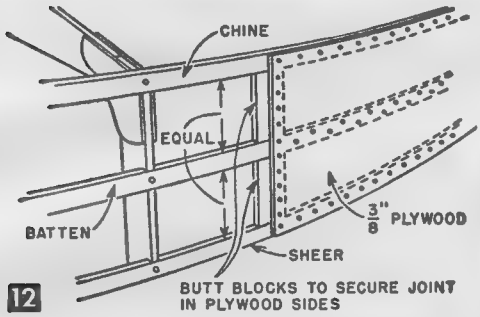
Readying the Motor Well

With the entire hull faired, saw out that portion of the keel immediately aft of #5 motor transom. Remove screws and saw out #6 transom (Fig. 9) so motor may be tilted. Notch #5 and #6 transoms for 1½ x ¾ in. frame pieces and fasten them in place with 2 in. #10 *fh* screws. Provide 1½ x 1¼ in. uprights (Fig. 5) and screwfasten to #5 and #6 transoms, to provide the side supports to motor well. Plank this well with ⅜ in. plywood, using plenty of Kuhls Seamlast at all joints. Fasten the plywood planking in well with 1¼ in. #8 *fh* screws, spaced at 2 in. and slightly staggered.

The motor board and spacer blocks are sawed from a 2 x 12 x 16 in. oak plank. Bevel the board and cut space-blocks as shown in Fig. 8 and fasten to #5 transom with two ⅜ x 6 in. carriage bolts and four 2½ in. #12 *fh* screws at the keel. Coat the exposed area at the keel liberally with Seamlast before fastening motor board in place. Trim motor board at keel so planking will lie evenly. Before planking is started, attach an outer frame to #6 transom (Fig. 5) with 1½ in. #8 *fh* screws, coating contact surfaces with Seamlast.

To plank the bottom, lay a ⅜ in. x 4 ft. x 14

Frame structure forward of bulkhead.



ft. sheet of plywood on the hull with the keel edge of plywood directly on center. Clamp in place and mark along chine and motor-well opening. Remove plywood and saw to shape using shaped plywood as a pattern for opposite side. Coat all contact surfaces liberally with Seamlast before laying shaped plywood in position. Clamp one bottom plank at a time and screwfasten at all contacts except battens with 1¼ in. #8 *fh* screws, spaced 2 in. Screwfasten plywood to battens with 1 in. #8 *fh* screws, spaced 2 in.

Planking Forward Stem

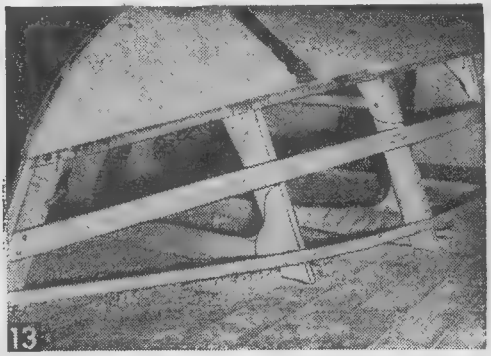
Since planking to cover the stem forward requires short pieces, make a pattern of this section on red rosin paper and transfer the shape to ⅜ in. plywood. Shape a batten to reinforce the plywood joints from a 2 x 4. You'll need to curve this piece to fit the bottom at this point. This thick batten with its flat side up and curved side adjacent to the plywood is trimmed to fit between keel and chine. Glue and screwfasten batten to plywood with 1¼ in. #8 *fh* screws.

The shaped fore ends of plywood are "steeped" in hot water for 15 minutes, transferred to position, clamped where possible and screwfastened in place like the aft bottom planking. Coat the butt joint of fore and aft planking with a stiff mixture of fine sawdust and resorcinol glue, and sand smoothly when dry for an invisible joint. Finish bottom by preparing a joint as indicated—42 in. aft of stem so side and bottom planking will form a butt joint. Aft of this point, bottom plywood laps over side.

The side planking is mostly clear sailing. Simply clamp a 4 x 14 ft. plywood sheet in position, starting from stem. Mark the plywood to fit joint forward allowing for later trimming. Mark to fit aft, remove and cut to shape, using shaped piece as a pattern for opposite side. Fit ¾ x 3 in. butt blocks back of plywood joints along sides after fore side planks have been fastened in place as the drawings indicate.

Before fastening side planks, coat chine and transom edges with Seamlast and coat battens, frame, and sheer clamps with resorcinol glue. Clamp side planks and screwfasten to chines with 1¼ in. #8 *fh* screws, spaced 2 in. Use 1 in. #8 *fh* screws for attaching plywood to clamps and battens. At side butt-blocks glue and screwfasten ends with 1 in. #8 *fh* screws.

The planking is finished by trimming edges of plywood evenly along chine joints at transom and stem, followed by "steeping" the outer stem



Trim bottom planking before applying side planking. Note corner in planking just forward of #2 frame where the bottom planking begins to overlap the side planking of the boat.

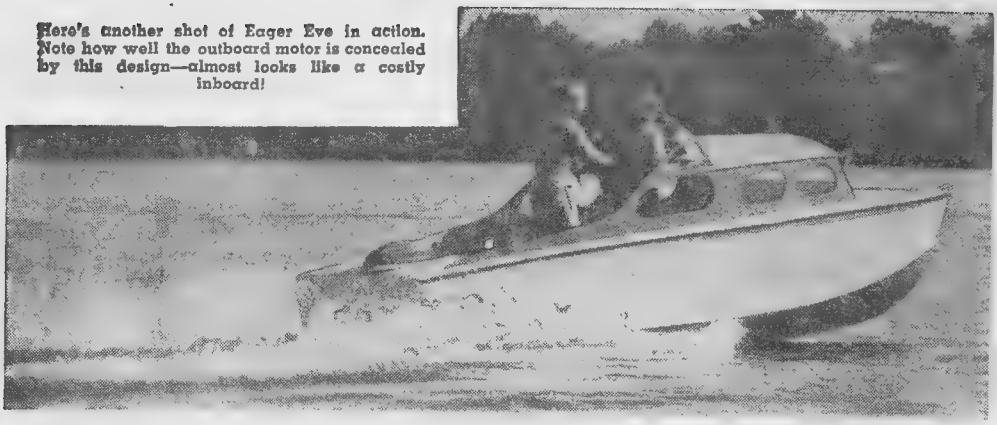
pieces in hot water and screwfastening to stem joint. Screwfasten outer keel in position with 2 in. #10 *fh* screws spaced 8 in. The outer keel should be tapered at the transom end and cut off about 12 in. forward of transom well opening as shown in the construction drawings.

Ready for Paint and Hull Finishing

With these jobs done you are ready to paint the bottom and sides, applying one priming coat of Firzite and puttying all screw holes. Apply two flat coats of Firzite followed by one thin coat of enamel as it comes from the can. Lightly sand all coats but the last. Now you're ready to turn the hull right side up, with the help of some husky lads, and chock it in position. Apply two coats of Firzite to the remainder of the boat, inside and out.

Finishing the cabin, floor and interior on *Eager Eve* and getting her ready for the water are greatly simplified by the deck beams and floor frames already placed as we will explain in the following pages.

Here's another shot of Eager Eve in action. Note how well the outboard motor is concealed by this design—almost looks like a costly inboard!



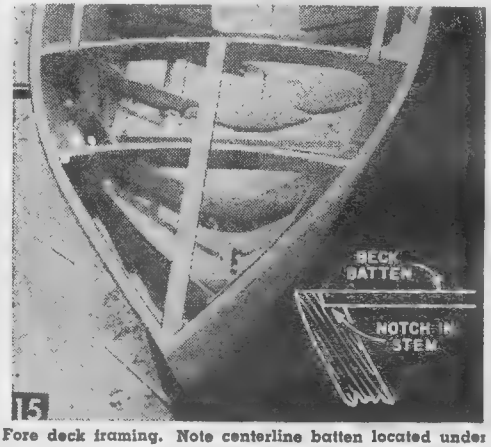
Completing the Deck, Interior and Controls

Now that you have completed the basic hull, framing, planking and other basic structural details, you're all set to complete the deck, interior and controls of this 18 ft. outboard cabin cruiser. The floor beams which form part of the hull and the simplicity of the interior design make *Eager Eve* much easier to finish and prepare for the water than other cruisers of her size.

Before planking the deck, you'll need to bolt or screw the deck gussets into place with two $\frac{3}{16}$ x 2 in. *rh* stove bolts at the main frames and three #8 x 1 $\frac{1}{4}$ in. *fh* screws at the half-frame positions. Notch the deck carlins flush into #2 frame and gusset, aft along the deck gussets and ending in a flush notch in the frame only of #6 transom. Screwfasten the carlin in the notches with one #8 x 1$\frac{3}{4}$ in. *fh* screw at each joint. Motor well carlins, $\frac{3}{4}$ x 2 in., are now notched flush into transoms #5 and #6 and screwfastened with two #8 x 1$\frac{3}{4}$ in. *fh* screws at each joint.

Before laying on the forward deck plywood, partially notch a $\frac{3}{4}$ x 2$\frac{1}{4}$ in. batten into the stem and fully flush into #1 and #2 deck beams to support the center of the plywood decking. Trim the $\frac{3}{8}$ in. plywood, preferably 5-ply mahogany face, evenly along the edges with a seam down the center over the deck batten. When cutting, allow 3 in. to extend aft of the #2 deck beam. To simulate deck planks, groove the plywood $\frac{1}{16}$ in. deep with an electric hand saw before screwfastening the decking to the sheer edges and the center batten with #7 x 1 in. *fh* screws, spaced at 2 in. Continue aft, fitting the side decking at each position and fastening with #7 x 1 in. *fh* screws. Where necessary to make butt joints, fit a $\frac{3}{4}$ x 2 in. butt block on the underside, coat the contact surfaces with resorcinol glue and screwfasten. Fit the $\frac{3}{4}$ x 6 in. coamings in position and screwfasten them to the frames with #8 x 1$\frac{3}{4}$ in. *fh* screws (as shown in Fig. 18).

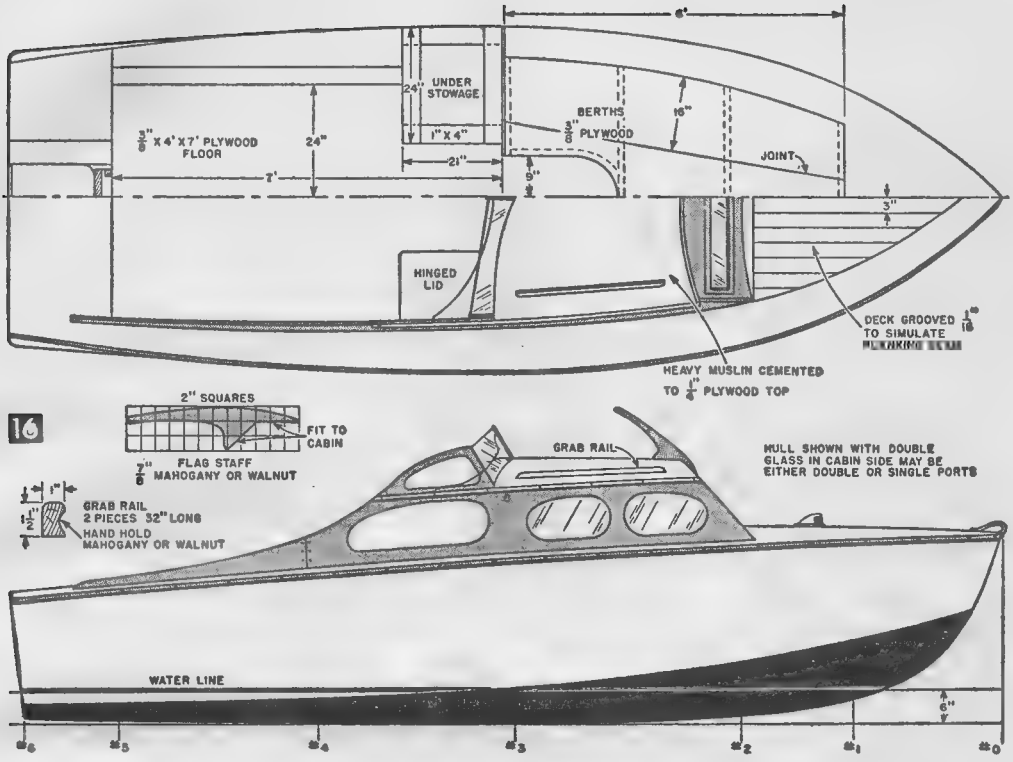
Knee supports and the deck carlin notched into the inboard corner ready for the coaming.



Fore deck framing. Note centerline batten located under the fore deck.

Constructing the Cabin Front

The cabin front and windshield are built up from corner posts and top and bottom pieces that frame the folding windshield. Start with the corner posts first—you'll find these posts are tricky to fit and should be lined up little by little until all the angles and bevels, including rabbetted joints are correct (Fig. 17). Fit the lower windshield crosspiece between the corner posts and over the curved deck. Since the bottom of this crosspiece is both curved and beveled to match



MATERIALS LIST—EAGER EVE (Cabin and Deck)

Lumber (Oak or Yellow Pine)

1 Pc.	3/4" x 6" x 10'	Cabin Beams
1 Pc.	1 1/4" x 8" x 6'	Fore Cabin Beams (behind windshield partition)
2 Pcs.	3/4" x 1 1/4" x 18'-6"	Moldings
2 Pcs.	5/8" x 1 1/8" x 8'	Spray Rain Bottom
1 Pc.	3/4" x 2 1/4" x 8'	Cabin Uprights
1 Pc.	1/2" x 2" x 4'	Cabin Top Batten
2 Pcs.	3/4" x 1 1/4" x 14'	Side Deck Carlins
1 Pc.	3/4" x 7 1/2" x 16'	Floor Frames
2 Pcs.	3/4" x 1 1/4" x 8'	Cabin Carlins
2 Pcs.	3/4" x 6" x 12'	Coamings
2 Pcs.	1/2" x 3/4" x 8'	Cabin Moldings
1 Pc.	2" x 2 1/2" x 48"	Cabin Corner Posts
2 Pcs.	3/4" x 6" x 48"	Fore Cabin Framing
1 Pc.	1/2" x 1" x 24"	Motor Cover Strut

Plywood (Fir Exterior Grade DFPA)

2 Pcs.	3/4" x 4' x 8'	Decking
2 Pcs.	3/8" x 16" x 8'	Cabin Sides
2 Pcs.	3/8" x 6" x 48"	
2 Pcs.	3/4" x 9" x 24"	Motor Cover Sides
1 Pc.	3/4" x 36" x 72"	Cabin Door and Curved Supports
1 Pc.	3/4" x 4" x 24"	Motor Cover End
3 Pcs.	3/8" x 4' x 7'	Flooring and Bunks
1 Pc.	1/8" x 4' x 4'	Curved Transom and Cabin Cubby
1 Pc.	1/8" x 24" x 36"	Motor Cover Top

Fastenings

3 Gross	1" #7 fh Screws	Decking
6	1/2" x 2 1/2" Bolts	Berth Supports
1/2 Gal.	Kuhls Canvas Cement	

Remainder of screws and hardware indicated in the previous Materials List.

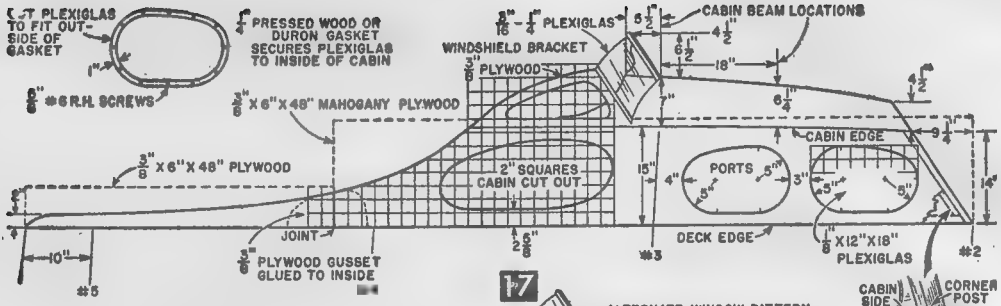
Hardware and Fittings

1 Pc.	3/16" or 1/4" x 24" x 42"	Plexiglas Wind Screen
1 Pc.	1/8" x 24" x 36"	Plexiglas Cabin Ports
2 Pcs.	1/8" x 3/4" x 18 1/2"	Aluminum Molding
2 Pcs.	4" x 12"	Bronze Screen
1 Bow Plate		1 Running Lite aft
1 Mooring Bit		1 Flag and Flag Staff
2 Bow Chocks		2 Life Preserver Cushions
2 Streamlined Cleats		2 Rubber Air Mattresses
1 Running Lite fore—red and gr.		
1 Gasoline Stove (2 burner)		

the plane of the corner posts, take your time to fit it closely. Coat the contact areas between deck and lower crosspiece liberally with Kuhls *Seamlast,* and screwfasten to the corner posts. Screw the decking to this crosspiece from the underside with #8 x 1¼ in. *fh* screws.

Shape the upper windshield crosspiece with a beveled curve across the top and rabbett it into the corner posts. Screwfasten with two #8 x 1¼ in. screws at each joint. Back of this upper crosspiece, fit a 1¼ in. thick beam curved and beveled to fit the top and screw the crosspiece to the beam with #8 x 1¼ in. *fh* screws from the fore side.

Cut cabin uprights, ¾ x 2¼ in., and cabin beams, ¾ x 2 in. according to Fig. 18. Screw the uprights to coaming with #8 x 1¾ in. *fh* screws. The cabin top beams are glued to top of uprights with ¼ in. plywood gussets, screwfastened with #6 x ⅞ in. *fh* screws. Notch cabin carlins, ¾ x 1¼ in., flush into the beams and partially into the corner posts. Extend the carlins about 3 ft. aft of #3 frame.



Screwfasten these carlins with one #8 x 1¾ in. *fh* screw at each joint.

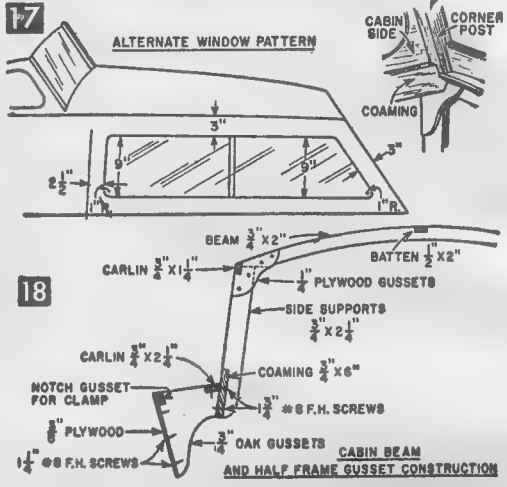
Lay out the cabin sides on ⅜ x 16 in. by 8 ft. 5-ply mahogany face plywood as shown in Fig. 17. First, fit the fore ends into the corner post rabbetts, then clamp along the sides and fit to the deck. Mark the port openings, using one or two openings, and the flying bridge port aft of the cabin bulkhead. Saw these openings to shape with a jig-saw or a fine tooth keyhole saw.

Before fastening the fitted cabin sides in position, coat the coaming, side deck contact edges and corner post rabbetts liberally with *Seamlast*. Screwfasten the cabin sides in place with #7 x 1 in. *fh* screws spaced at about 3 in. at all points. Shape the aft ends of the cabin sides, set in *Seamlast* and screwfasten in place, gluing a gusset behind the butt joint (Fig. 17).

Fair the top and cabin sides for the cabin top of ¼ in. plywood to fit smoothly. Notch a ½ x 2 in. batten into all beams and extend it aft of #3 beam about 6 in. Apply the cabin top in two

Fitting the cabin sides.

Applying cabin top after sides are in place. Note sweeping curve from center of cabin top to the sides.



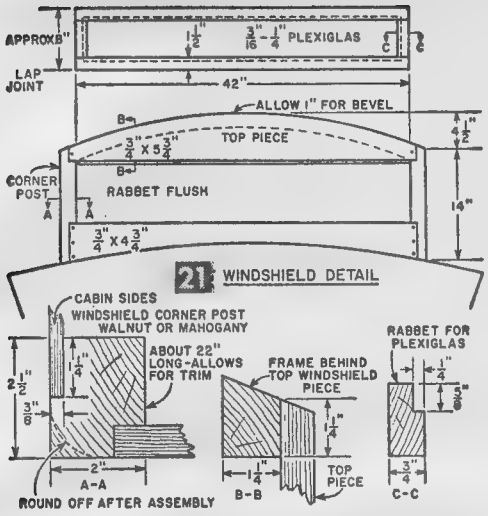
pieces, splitting it down the center over the batten. Mark the ¼ in. plywood even with the end of the center batten and fashion a sweeping curve out to the cabin sides (Fig. 20). Screwfasten the two top pieces in place with #7 x ⅞ in. *fh* screws spaced at 3 in. along all contact edges.

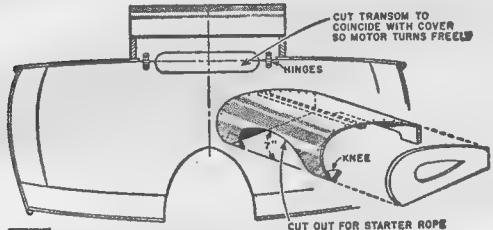
Round off the edges of the plywood cabin top and cut a single piece of heavy muslin to fit. Follow directions on the can of Kuhls canvas cement and it will not be necessary to tack the edges. Lap the muslin over the edges about 1¼ in. and cement to the underside of the plywood top. Lap the aft edge of the cloth under the curved edge and cement. For a neat finish at this curved aft end, cut a plywood gasket ⅜ x 2 in. and cover the tucked under cloth. Clinch nail this gasket from the top, preferably with copper clout nails.

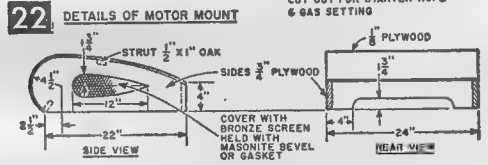
To finish the cloth surface, thin one quart of the canvas cement with turpentine to the consistency of thin paint and coat the entire cabin top, working the cement into the cloth. When the cement is dry, finish the outer edges with a ½ x ¾ in. molding finish nailed or screwfastened in place. Apply one thinned coat of deck enamel, followed by a second coat straight from the can.

Make up the upper windscreen supports and groove the edges for the ¼ in. *Plexiglas* or *Lucite* sheets. At this point, finish the cabin sides—two coats of *Firzite* followed by two coats of spar varnish to the mahogany or walnut faced plywoods.

You can plank the cockpit floor with a single sheet of ⅜ in. plywood 4 x 7 ft. No additional floor







stringers are required, as the tops of the frames provide plenty of support. It will be necessary to fit the plywood floor to its position, notching for motor board uprights and #4 and #4A frames.

Bunks are ⅜ in. plywood laid over the berth supports which were previously bolted in place. You'll need an additional support, 1⅝ x 1⅝ in. bolted to the forward side of #3 cabin bulkhead. Fit the berths and screwfasten the berths and floor in place with #8 x 1¼ in. *fh* screws. Screwfasten additional pieces of ⅜ in. plywood to the aft side of #3 cabin bulkhead and cut a cabin door from ¾ in. plywood.

Plexiglas or *Lucite* for windows and windshield should be 3/16 in. thick with ¼ in. recommended for the flying bridge windscreen.

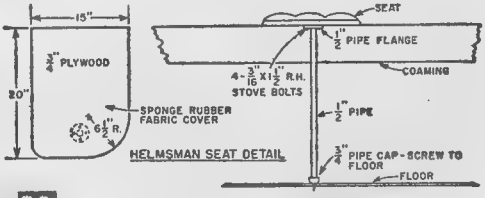
Complete the transom assembly and the motor well according to Fig. 22. Bend ⅛ in. plywood around the curved portions of the well, glue and screwfasten with #6 x ½ in. *fh* screws at 1¼ in. spacing. The curved-top motor cover muffles some of the outboard engine's exhaust.

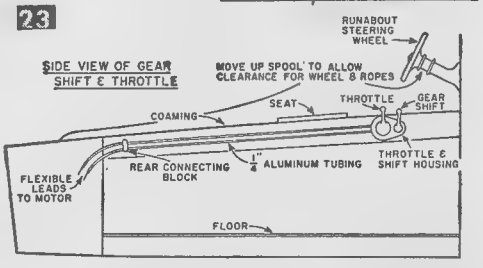
The original *Eager Eve* was decorated in a pleasing contrast of a green bottom, white sides, varnished fore-deck (simulated deck seam grooves filled with brown seam compound) and side covering boards light blue. The canvas cover over the cabin was finished in a yellow buff and the cabin sides in natural finished gum. After painting, attach the moldings around the sides with #8 x 1¼ in. *fh* screws spaced at 8 in.

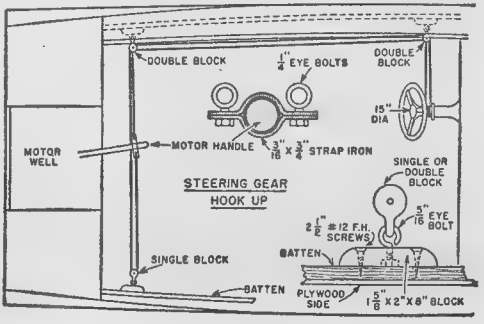
The streamlined flag staff with a pennant whipping in the breeze adds a sporty touch to *Eager Eve*. Saw the staff from solid mahogany or walnut and finish with clear spar varnish.

Installation of the throttle and gear shift controls and a steering wheel on the aft side of the bulkhead will vary according to your outboard engine and the type of controls you select. Locating the engine controls near the wheel affords flexibility and convenience. The controls are relatively expensive (about $75) and should be installed by an outboard engine dealer to make certain there is proper clearance without binding and to assure smooth operation. Without these controls, direct steering and engine operation is still simple from the back of the cockpit.

• To obtain enlarged plan for building Eager Eve, Craft Print No. 175, see handy order form on last page of this issue.








Planing Sailer
"tabu"

By combining new materials with improved techniques of water dynamics, this sports sailer brings about a new concept of high-in-the-water speed sailing

Craft Print No. 356

Designed by William Jackson

SPEEDS of up to four times faster than conventional sailers of comparable size are possible with the Tabu. To achieve this speed, it rides over the surface instead of forcing its way through it. It performs much like the outriggers made by the Polynesian Islanders whose handmade craft often exceeded 20 mph.

A 16-foot planing sailer like Tabu if purchased ready-made will cost you from $1700 to $2000. The primary reason for this high price is because there are only a few firms who make them, and they, in turn, can charge premium dollar for their product which is the end result of their "exclusive" knowledge about what makes a *planing* sailer.

Several years of research have gone into designing this sailer for *Boat Builder*. By following the designs given in this article you can build a craft just like the one that we came up with and proved to be a successful planing sailer.

An exceptionally strong structure is produced by utilizing two frames and the transom so they add the necessary support with the logitudinal stiffening members. Covering the craft with Dynel makes it sufficiently flexible so it rolls and yields with impact, but still maintains a strength ratio just a little below that of steel.

Sailing light weight boats in winds over 15 mph requires masts that are not heavy. Ordinary spars made of wood are too heavy, with too many foot pounds of weight aloft to carry sail in a real blow. When planing sailers really take off they begin to throw spray like an outboard runabout, riding out upon the water's surface at speeds just under wind velocity.

Aluminum masts are light weight, rigid and unyielding, but will cost from $150 to $200. The one used on the Tabu costs about a tenth less to make, and weighs only 23 pounds when covered with Dynel. In winds over 20 mph it will yield and flex considerably without fracturing. We discourage covering the masts with fiber glass, as this product has a tendency to fracture, and does not have the flexibility of Dynel.

Planing performance of sailers like the Tabu necessitates reduction of excess weight. This means you must carefully consider the kind of plywood and lumber to use for the craft.

Six sheets of 4x8 plywood are used to construct the Tabu. A sheet of ¼-in. fir weighs approximately 22 pounds, and the amount required comes to about 132 pounds. Mahogany, on the other hand, weighs 17 pounds a panel. Total weight for the latter, considering you need six panels, comes to 102 pounds.

The mahogany will cost about $3.84, depending on local prices, more than fir of similar quality for all you need, and effect a weight savings of 42 pounds. If you use mahogany plywood, be sure to check for face veneer and consistent overall thickness. Tissue paper thickness face veneers on some mahogany is too weak for use on the Tabu, as it will only fracture when the winds mount over 15 mph.

Thinner gauges of mahogany can be used in constructing the hull if you cover it with Dynel. By using this covering you are able to save over 15 pounds of weight, and still provide the necessary structural strength.

We used western spruce for other members, but any other light weight strong wood will also function well. Philippine mahogany is excellent for framing. It costs less than oak, and may be obtained in long, clear lengths.

There are several advantages to using Dynel instead of fiber glass. Besides the weight factor we just mentioned it can be stretched in place and eliminates the use of

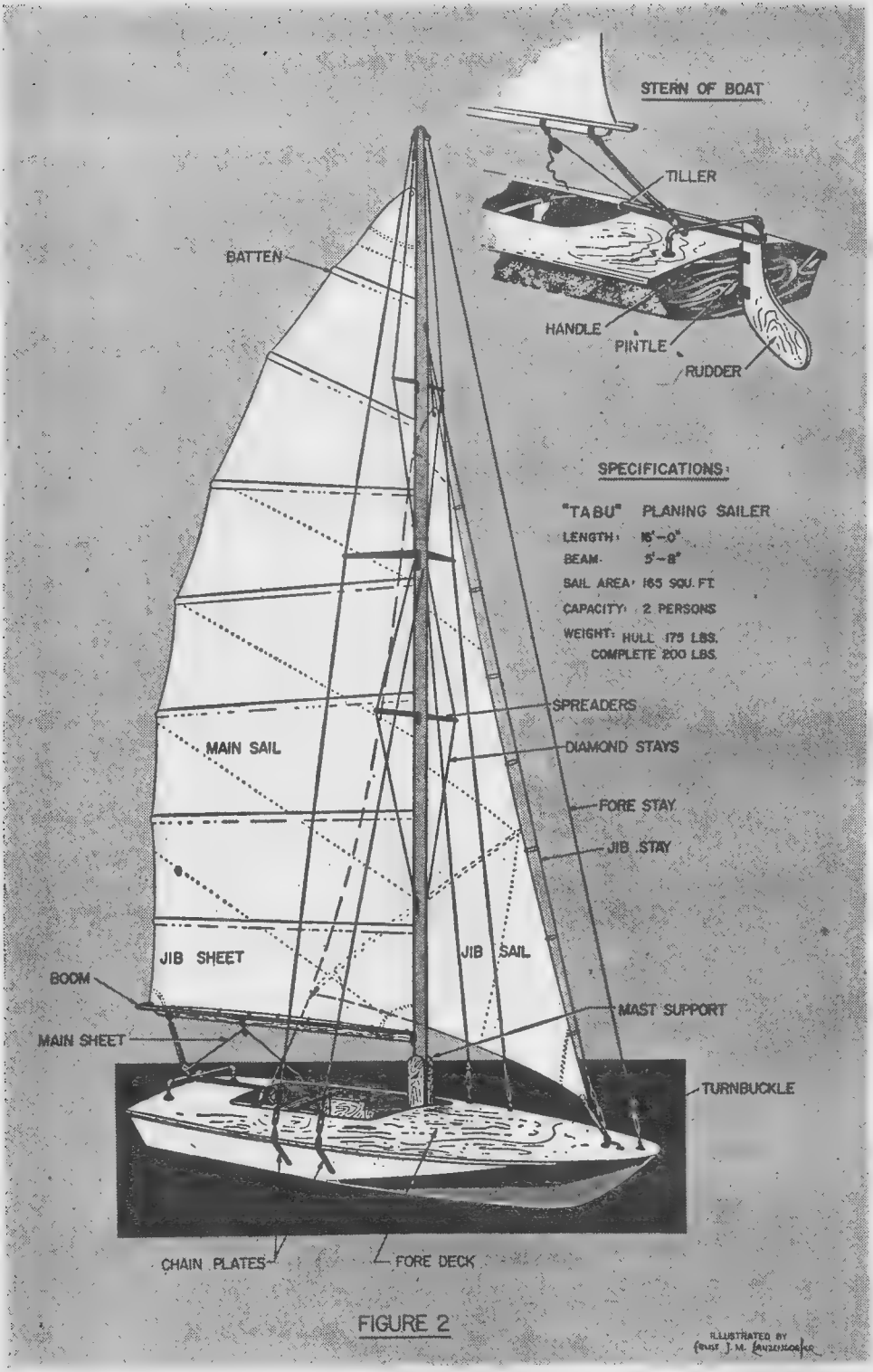
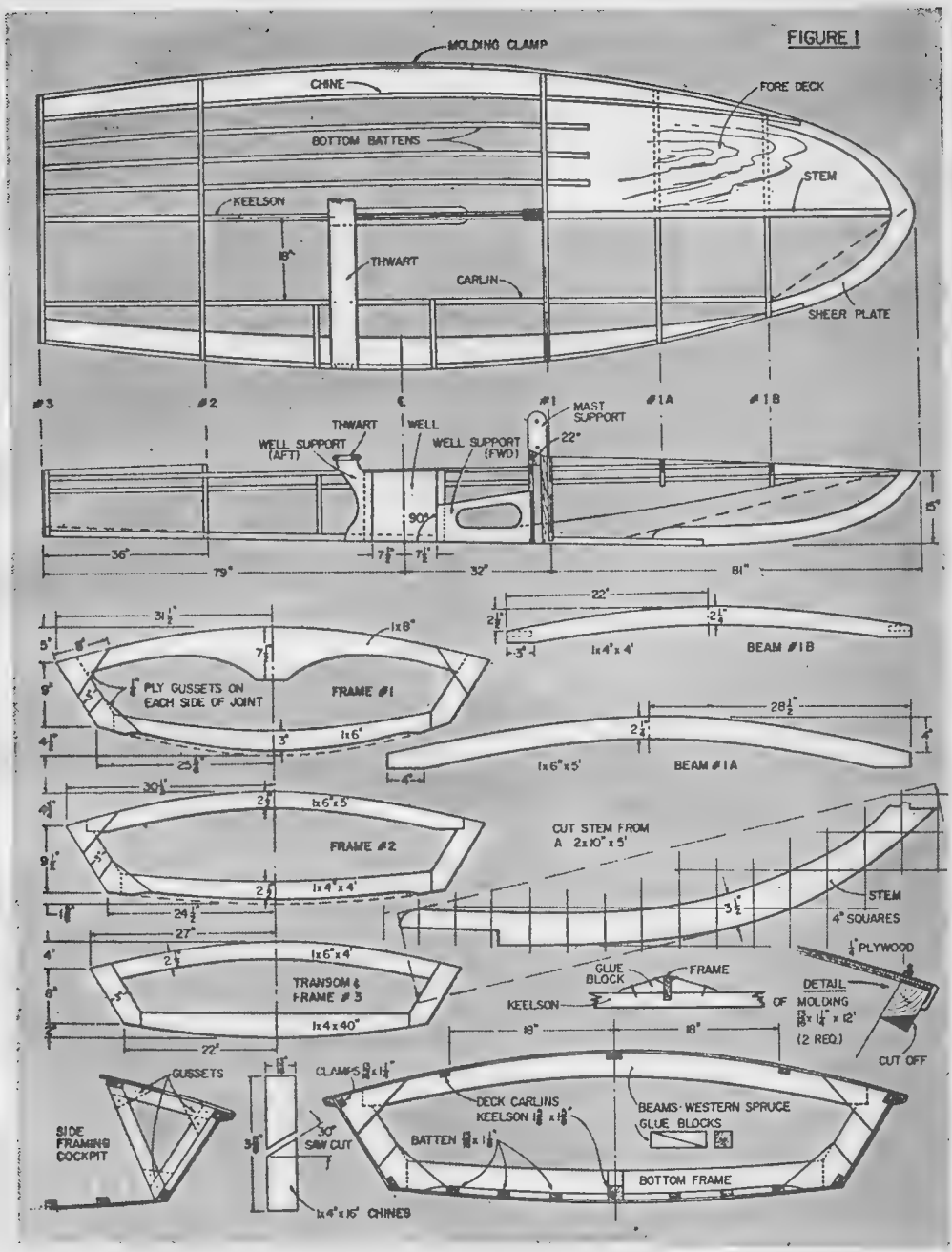


FIGURE 2

ILLUSTRATED BY [illegible] J. M. [illegible]



glass tape at chines, sheer, and conforms intimately to the curved surfaces. Although Dynel requires slightly more resin, it "wets" out much more thoroughly than glass cloth and affords a superior bond.

It also enabled us to make the mast out of ⅛-in. material, which made it lighter in weight than aluminum. Once wrapped around the sail support it made it about five times more flexible than glass, which allows stay wires to be set up sagless and not be rigid like most mast assemblies, which induces considerable strains upon the lightweight sailer. The toughness index for Dynel

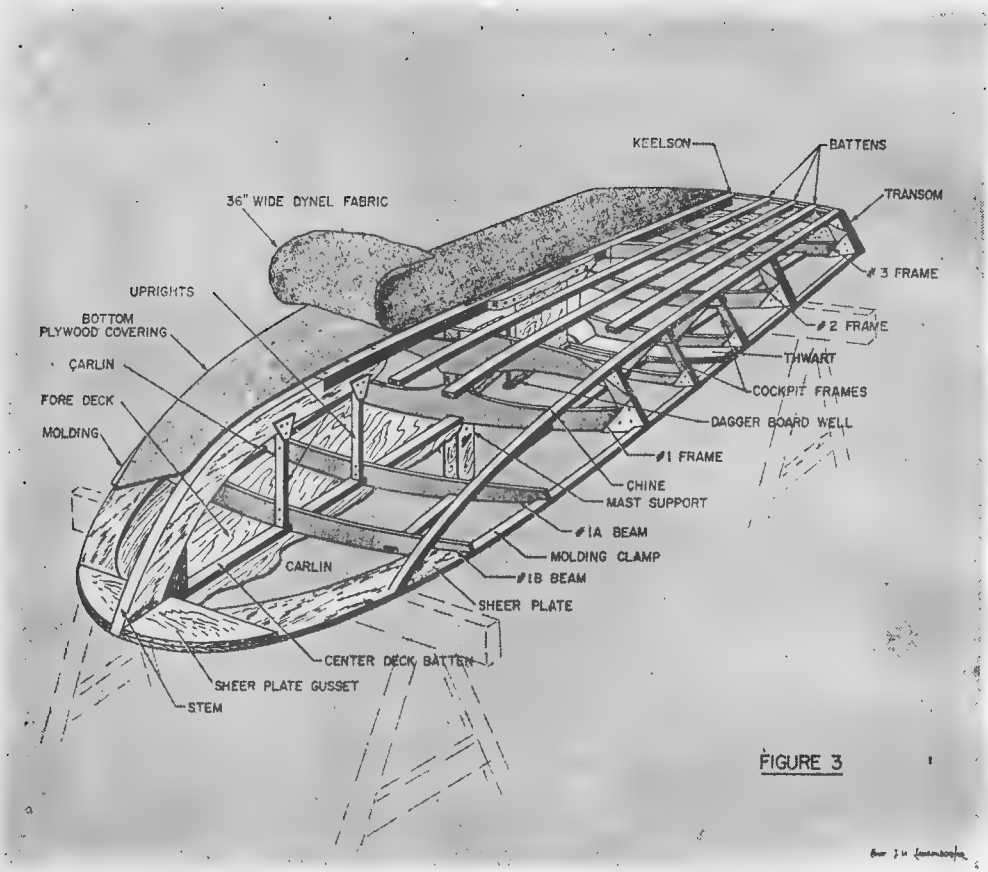


FIGURE 3

is 8030 foot pounds per cubic inch, while it is only 1900 for glass.

Building forms are not necessary when constructing the Tabu. Simply use two saw horses and clamp four or five 1x2's to the frame to prevent it from twisting.

Begin work by making the transom and #1 and #2 frames. The deck beams (#1A and B) stem and sheer plate are then cut to size and shape.

Many hardware stores carry a wheeled pattern transfer tool that enables you to transfer the full-size patterns you make on paper to the wood without damaging the pattern. With this tool you can insure yourself of precision-built parts.

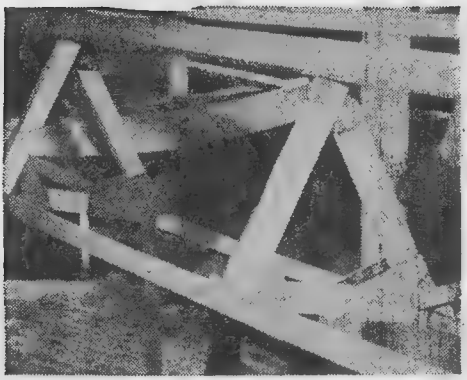
Make the parts for keelson assembly by first ripping a 10 foot long 2x4 in half the long way, then cut off two 6 foot lengths. Shape the cutoff parts so they can be fitted in place to make up the well portion of the keelson.

Place the stem on the fore part of the keelson, and the transom on the after part of the keelson, as shown in the drawings. Position the precut #1 and #2 frames in place on top of the keelson. Hold the frames in place with 1⅝-in. beveled blocks.

From this point on always maintain a constant check on the straightness of the keel so you can be sure of always cutting the remaining components to size and fitting them properly in place.

After the side and bottom plywood is attached the hull will hold its shape. We used one inch #15 Silicon Bronze nails to fasten the hull components. Space them 2 inches apart when attaching the plywood to the framing members. This fastening arrangement will require about 1½ pounds of these nails.

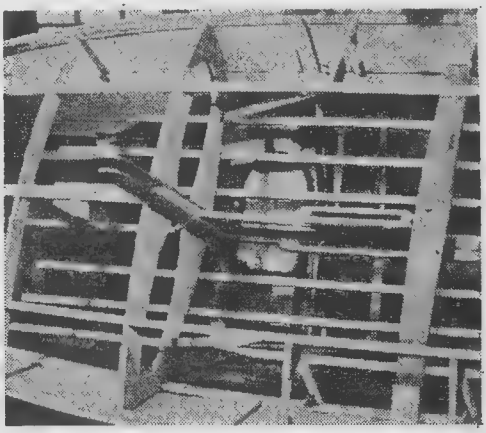
Elmer's Waterproof Glue or Weldwood's Phenolic Resin adhesive is recommended as a coating between every wood-to-wood con-



ALL MATING MEMBERS are glued together.

FRAME STRUCTURE forward of the bulkhead.

CAREFULLY BEND plywood over hull and deck.



MAST STEP is attached directly to frame No. 1.

tacting surface. This provides for increased bonding, and insures an equal amount of stress between the mating surfaces and not on the fasteners.

Chines, sheer clamps and battens are attached with one 1¾ No. 8 fh screw for each joint. Once the hull is framed, trim and fair all framing surfaces with a Stanley *Surform* wood file to insure intimate contact of the plywood covering that is to be fastened in place later on.

Cut the plywood panels to size by following the measurements given in the drawings. Remember to cut the paneling face up on a bench saw and face down when using a saber saw to reduce splintering. Use a fine-tooth blade in the saber saw.

Fasten the shaped pieces to the hull with one inch serrated nails that are spaced 2 inches apart. Once the bottom and sides of the hull are glued and nailed in place, round off the edges along the chines, attach sheer mouldings, and apply the Dynel covering.

Make sure the Dynel overlaps the center line of the keel and sheer moulding by at least one inch. Pull it tightly over the hull and secure it along the sheer moulding with ⅛-in. mason's twine that's held in place with steel tacks that pass through the cord.

Steel fasteners can be used because three coats of resin will be applied which will completely cover the tacks and twine. This resin overlay will make a corrosion-proof plating over the entire hull.

After the Dynel is applied over the entire hull, turn the planked structure right side up and trim the plywood and moulding evenly along the sheer, then prepare to attach the plywood decking.

Use the same construction procedures to attach the decking. First glue all contacting surfaces, then nail the components in place.

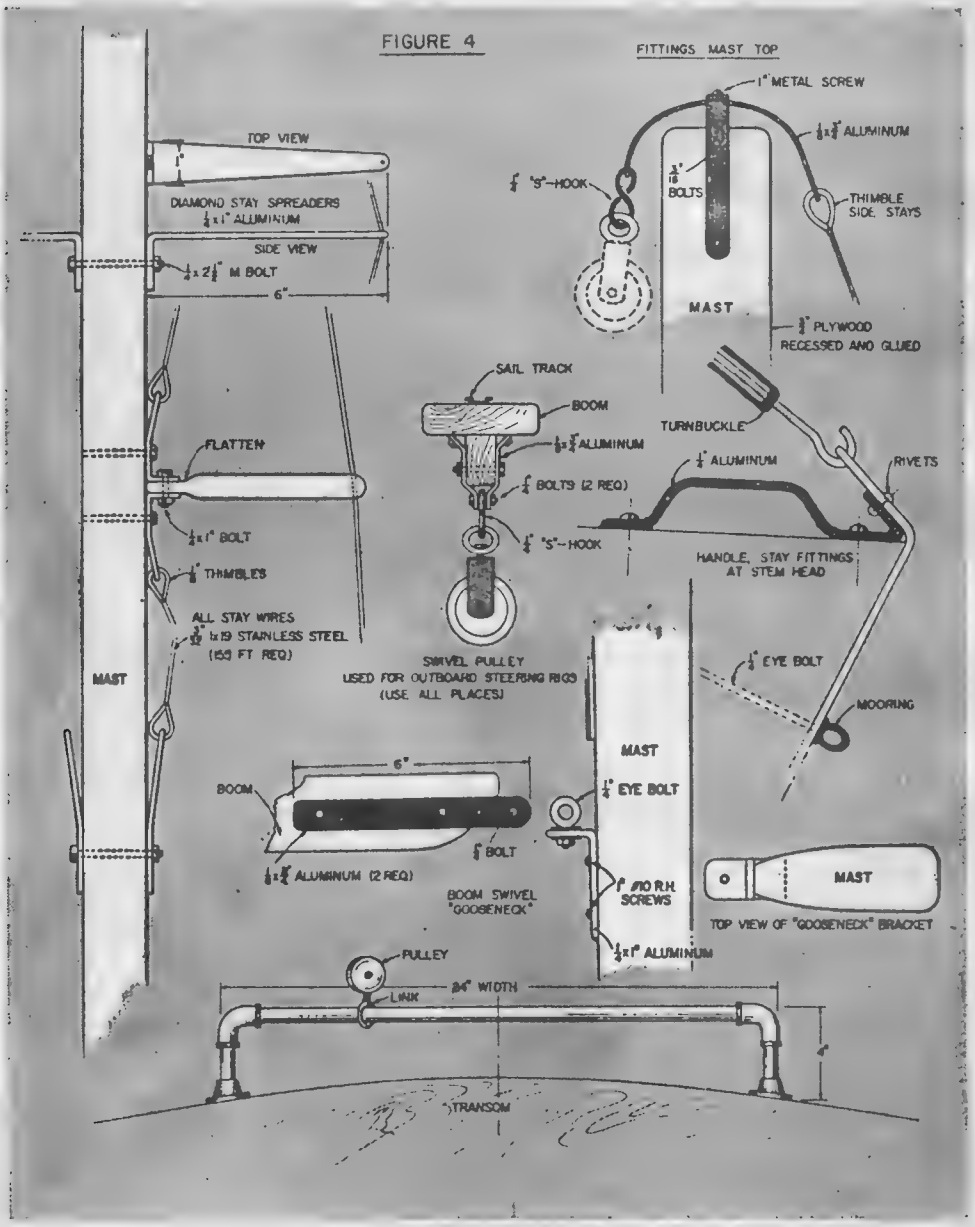
Before attaching aluminum mouldings to the sheer, cover the deck with Dynel and

apply three coats of resin. If additional paint coats are not to be brushed on, simply use resin with pigment included. After the resin dries attach the three 12-foot aluminum mouldings.

Center Board and Rudder. Recent advances in highly efficient under-water shapes have clearly determined that air foil shapes are not efficient when submerged. In fact, they are actually detrimental to speed.

For the Tabu a hollow, ⅛-in. plywood dagger board and rudder were worked out to eliminate any drag. The center board and rudder are made with ⅛-in. mahogany because we found that ⅛-in. fir plywood was much too brittle.

Spline pieces are positioned to achieve the proper water dynamic shape. Edges of the board and rudder are clinch nailed with one-inch thin gauge common wire fasteners. Once the glue dries, cover with Dynel and apply three coats of resin. Sand all but the



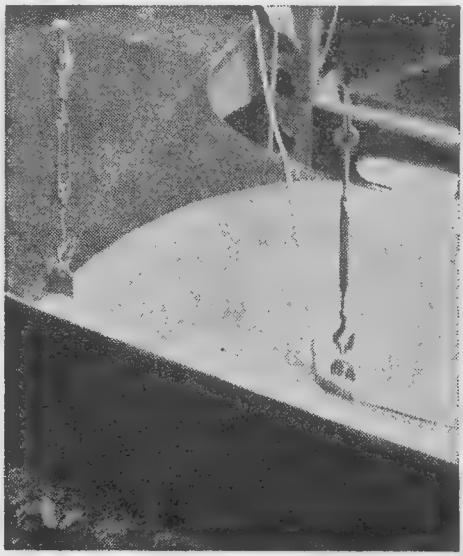
last coat, which should be finished with a very fine abrasive to make a steel hard surface with the absolute smoothness required in a fast planing-type sailer.

A hinged-type center board is not used in the Tabu because it proved inefficient. As the hinged board is lowered the centers of lateral resistance varies through a wide arc, causing erratic sailing.

To use the streamlined dagger board, simply shove it into the case for "tacking," and in this way utilize most of the board surface. For planing, pull the board out to expose as little surface as necessary to maintain good control.

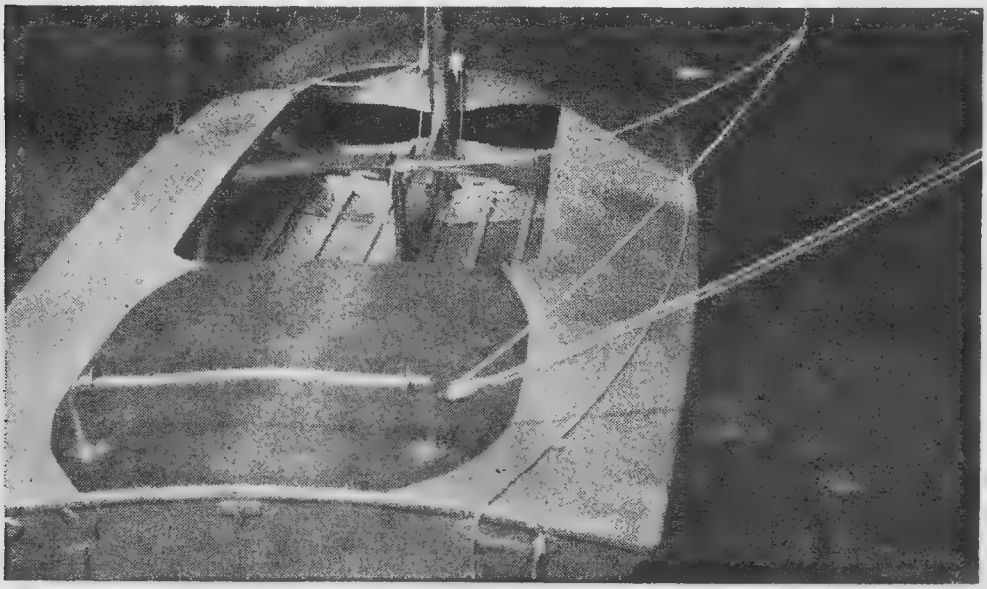
At high speeds the dagger board acts like a fin that is found under all outboard hydroplanes, and needs scant surface to control the boat. In fact, the less board surface exposed, the higher will be the sailing speed.

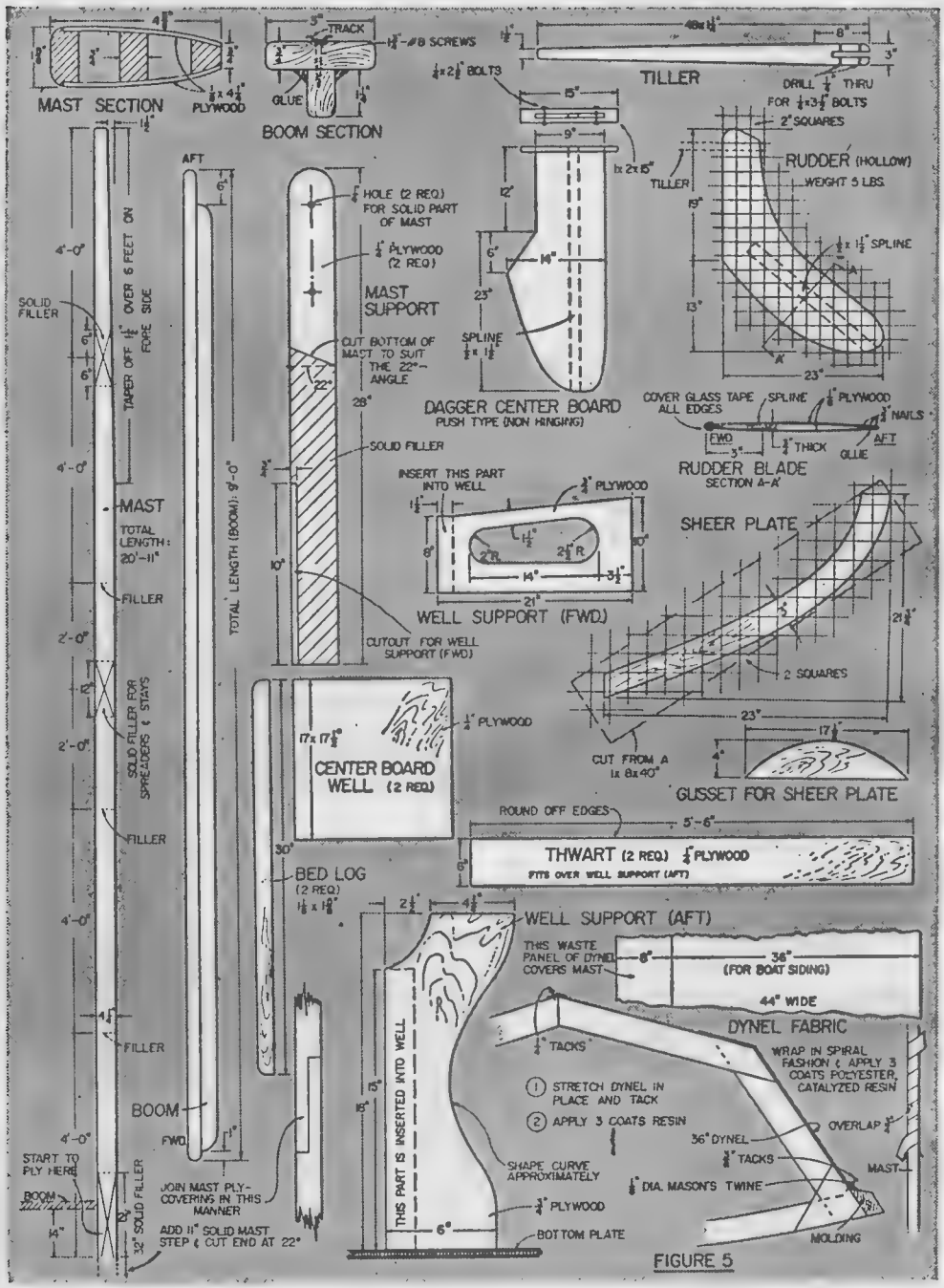
DAGGER BOARD was made from 1/8-in. mahogany. It's hollow to eliminate any drag.



MANY of the rigging components were hand made to keep overall cost of sailer down.

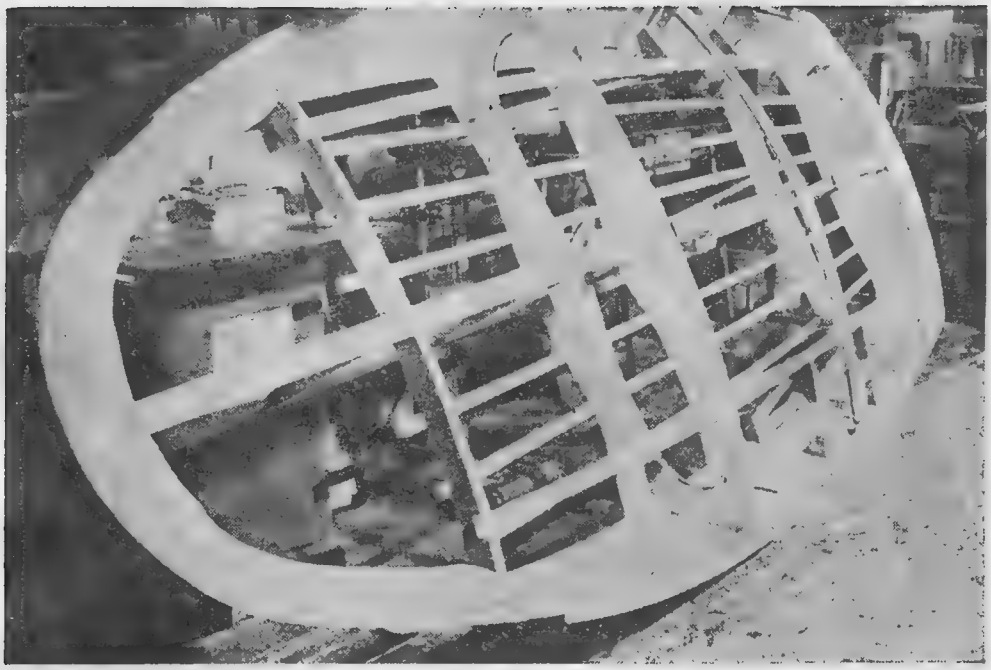
ENTIRE shell was covered with Dynel fabric to increase overall strength of the craft.



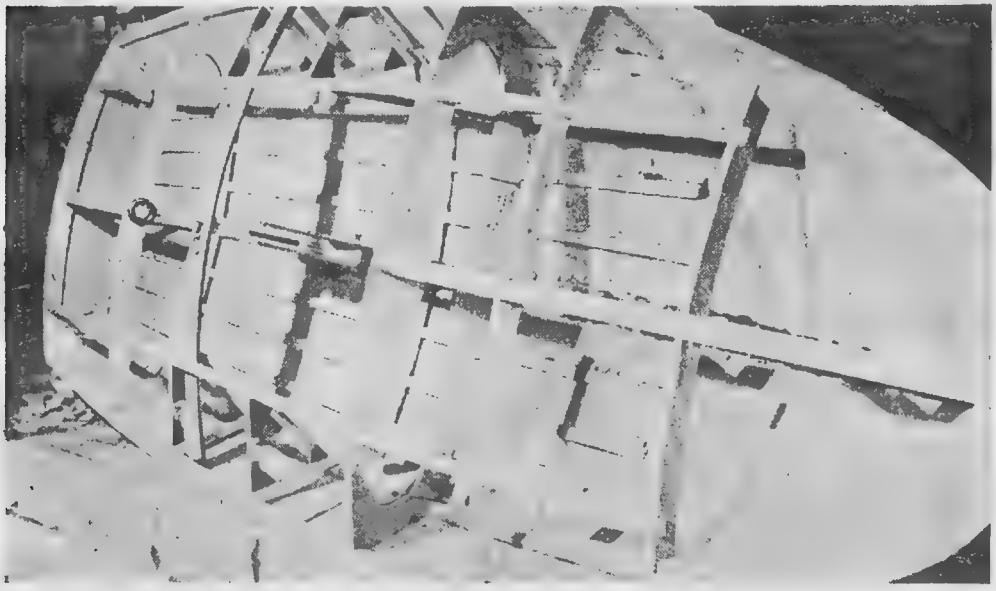


Construct the mast from ⅛-in. mahogany plywood and you will have one that is lighter than aluminum. By wrapping it with Dynel you can increase its strength so it can stand gusts up to 25 mph without fracturing.

The ability of this material to hold up under strain was recently proved to us. The Tabu is moored in shallow water, twice in wind storms where the gusts were as high as 60 mph, this sailer turned over and during the storm the mast was pounding on the bottom of the lake with the hull acting as a



ALWAYS maintain a constant check on the straightness of the keels so all members fit right.



FASTEN plywood to hull with one-inch serrated nails that are spaced every two inches.

handle. When the Tabu was righted the mast did not show the slightest sign of fracture.

Finishing Your Sailer. Lead and oil base paints do not adhere to a glassed surface. Therefore for the outside of the hull we used Stay-Tite's *Fleet* finish (Urethane) that is available in a variety of popular marine colors. An epoxy paint can also be used. The inside of the hull was covered with a clear Stay-Tite Urethane.

We made many of the rigging fixtures from aluminum stock that is available from

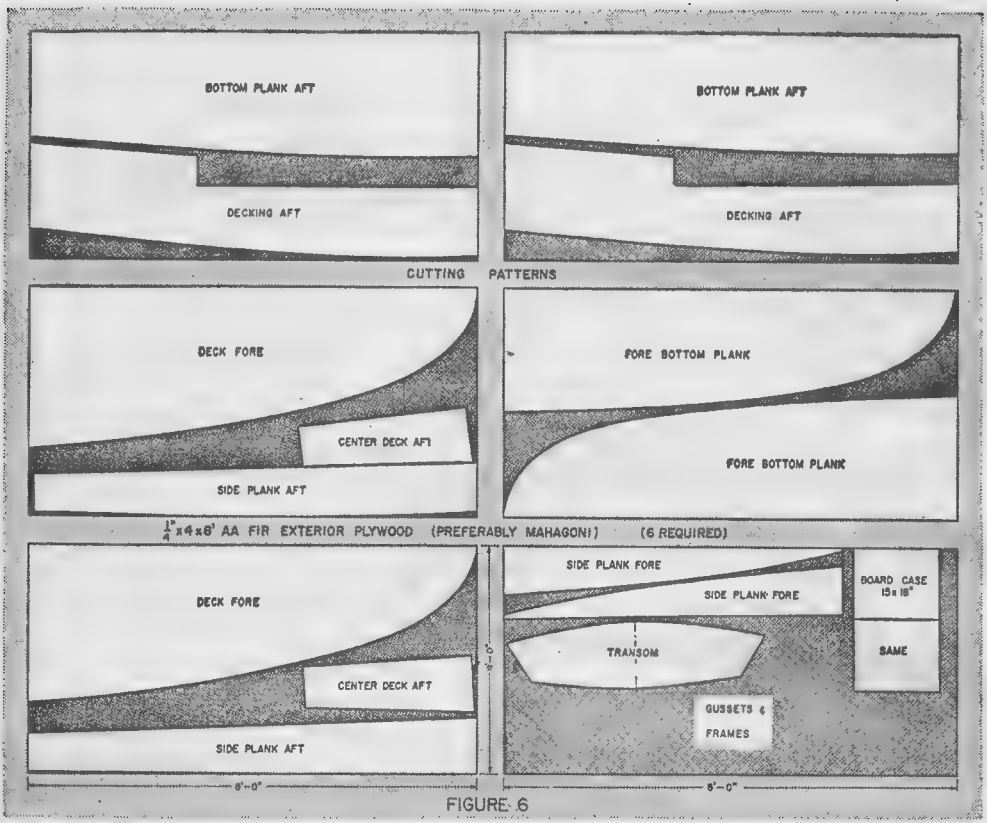


FIGURE 6

most mail order companies and at lumber yards. Thin, stainless steel fittings can be ordered from the Race-Lite Marine Hardware Co. or bronze rigging supplies from Alan Clarke Co.

Splicing of such thin wire, and especially stainless steel, usually requires the services of an expert. But the intricate splicing may be eliminated by slipping the wire through and around thimbles, and securing it with a ⅛-inch wire clamp, allowing 3 inches of the wire end to extend beyond the clamp.

Finish the extended portion of the wire by winding loosely, separated turns with thin "seizing" wire, and rigidly cold weld the entire joint with *Poly-Epoxyn Solder.*

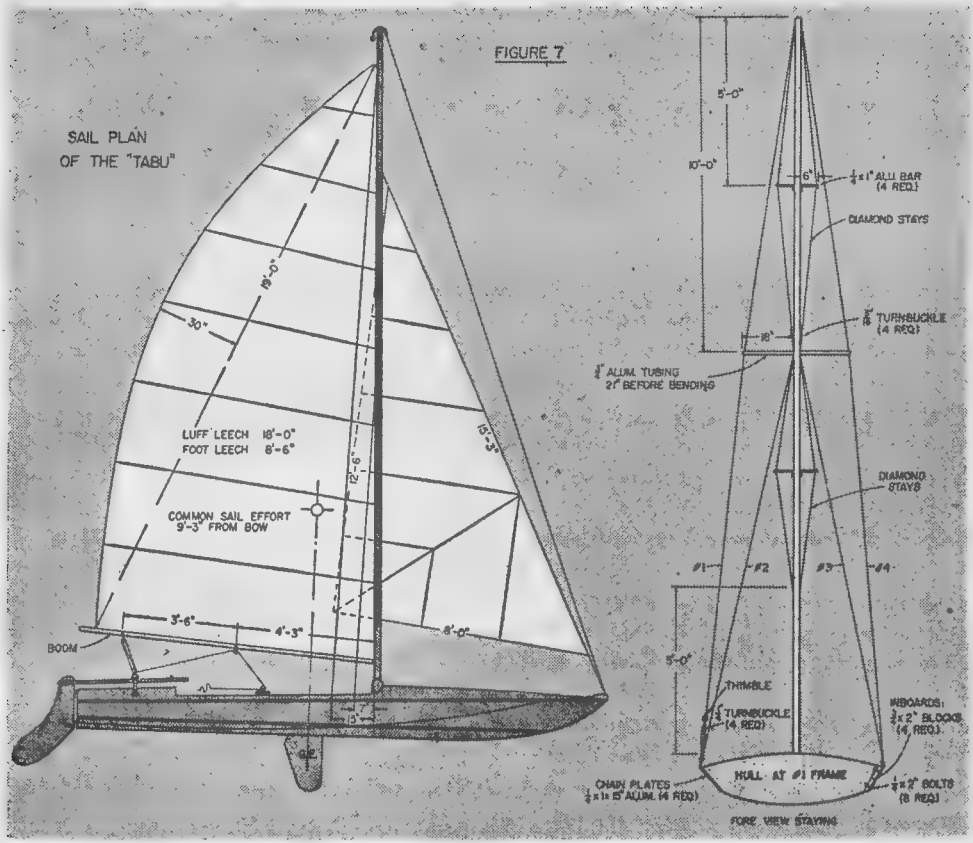
This epoxy solder is a two part plastic that is available in paste form. All you have to do is mix the two parts together and the solder is ready to use. Your next step is to apply it to the wire joint with a putty knife. To make a neat, symmetrical job, just hold a heat lamp a few inches from the pasted joint and the adhesive will permeate the wires.

Stainless steel is exceptionally difficult to join with conventional products. Silver solder was used but it lacked prolonged holding power. Epoxyn, however, will give you an inseparable joint that you need for a lasting connection. The adhesive can later be filed smooth or the excess removed to give you a professional looking job.

You can use just about any kind of sail on the Tabu and approach fairly close the speed formula that applies to the ordinary displacement type of sailer. But if you want a planing sailer, then you don't want to settle for just any kind of sail.

The Tabu is a combination of many techniques gleaned from the English, Australians, Japanese, and aerodynamic designs. Self-made sails will afford only a mediocre sailing craft, and not one worth the time, money and labor that is required to create the Tabu. It would be like putting a Model T engine in a modern sports car—it can be done but does nothing to improve performance.

We used Alan Clarke dacron sails that are impervious to sun, moisture, and are several times stronger than those made of cloth. ■

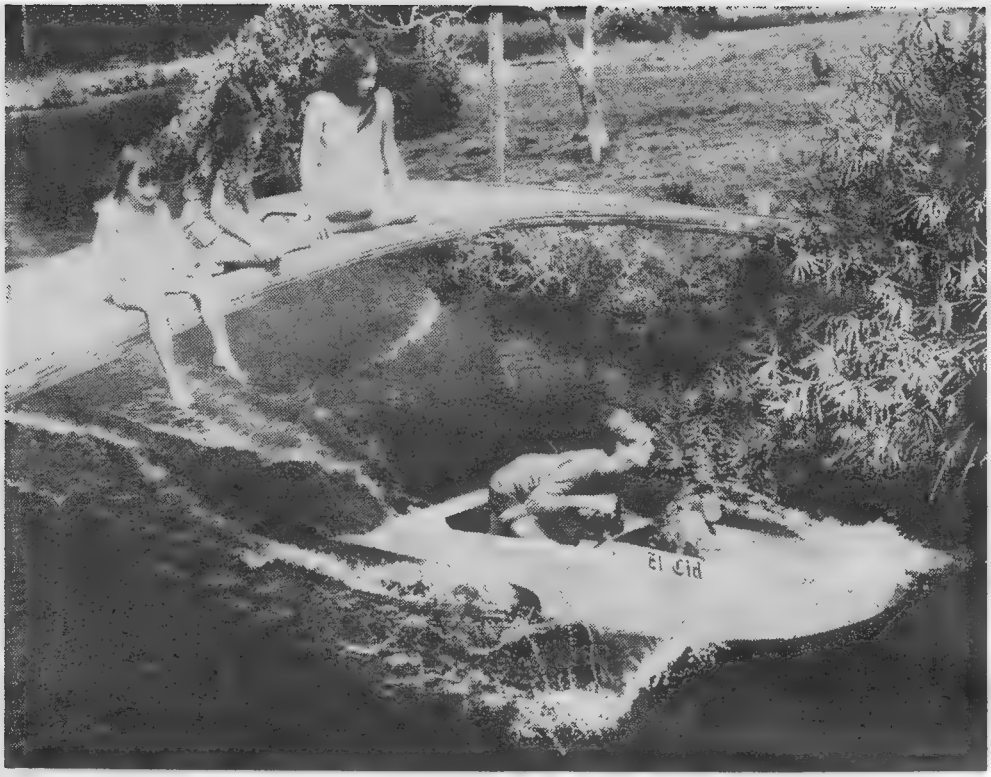


MATERIALS LIST—PLANING SAILER

Amt. Req.	Size and Description	Use
	LUMBER	
1	⅛"x2x8' mahogany exterior plywood	mast
6	¼"x4x8' mahogany, or AA fir exterior plywood	hull and deck
1	(1x4)x2' spruce or fir	#1 frame
3	(1x4)x4' spruce or fir	transom, fore beams
1	(1x4)x8' spruce or fir	#2 frame
2	(1x4)x10' spruce or fir	bottom battens
1	(1x4)x12' spruce or fir	mouldings
3	(1x4)x16' spruce or fir	chines, clamps, deck carlins
2	(1x6)x4' spruce or fir	#1 frame, transom
2	(1x6)x5' spruce or fir	#2 frame, fore beams 1A and B
1	(1x6)x10' spruce or fir	boom
1	(1x6)x16' spruce or fir	mast
1	(1x8)x5' spruce or fir	#1 frame
1	(1x8)x8' spruce or fir	sheer plate
1	1¼x3x48" spruce or fir	tiller handle
1	(2x4)x10' spruce or fir	keelson
1	(2x10)x5' spruce or fir	stem
	HARDWARE and FITTINGS	
6	5/16" rope-use pulleys	outboard steering lines
1	¼x6" eye bolt	bow
4	3/16" "Petite" turnbuckles	diamond stays
6	⅛" turnbuckles	
150 ft.	5/16" nylon rope	
155 ft.	3/32" 1x19 stainless steel wire	
12	⅛" wire rope thimbles	
32	⅛" cable clamps	
4	6" aluminum cleats	
2	complete sets ¾" Pintles & Gudgeons	
1	gooseneck (snipe style)	
28 ft.	5/8" sail track	
1	sheet traveler	
1	suit of sails	
36 ft.	#182 aluminum moulding	
	FASTENINGS, ADHESIVES, PAINT	
20 yds.	48" width Dynel or Dura-Nel 815 Fabric*	
3 gal.	resin	
1 box	steel tacks	
2 qts.	Stay-Tite "Fleet" paint	
1½ lbs.	#15 Stronghold serrated nails—galvanized or monel metal	
4 doz.	1¾" #8 fh screws	
1 gal.	Elmer's glue	
1 pt.	epoxy solder	

*Available from the
Alan-Clarke Co.
235-239 Main St.
Northport, N.Y. 11768

• To obtain enlarged plan for building Tabu, Craft Print No. 356, see handy order form on last page of this issue.



EL CID

By Hal Kelly

Build this sportboat in days for less than $100. It'll provide hours of safe fun for youngsters of all ages

El Cid is a mini inboard hydro that's powered with a 4 H.P. air-cooled engine. Its top speed is about 16 mph with a 100 lb. teenager aboard. It features a "dead man's" throttle that shuts the motor off when the driver lets go of the throttle, so there's no danger if the operator falls off the boat. Safe enough for an eight-year-old, it's a great little boat for the young to start out on. Use is limited to well-protected waters, of course.

Light weight is important to this hull, so lightening holes must be cut in some structural members, and all planking is of ⅛-in. plywood except for the ¼-in. plywood sponson planking. Framing is of spruce or cedar, in ½-in. and ⅓-in. thicknesses. If you can't get ½-in. stock, buy ¾-in. lumber and use a planer jointer to bring it down to size. Your lumber yard will do it for you for a modest fee. Motor mounts are cut from 2-in. x 4-in. fir.

Start construction by making up the transom and ribs. The transom is cut from solid ½-in. cedar stock, and is carefully notched for the keel and battens. Use a circle saw to cut out the lightening holes; see Fig. 1. Cut ⅛-in. plywood to the same

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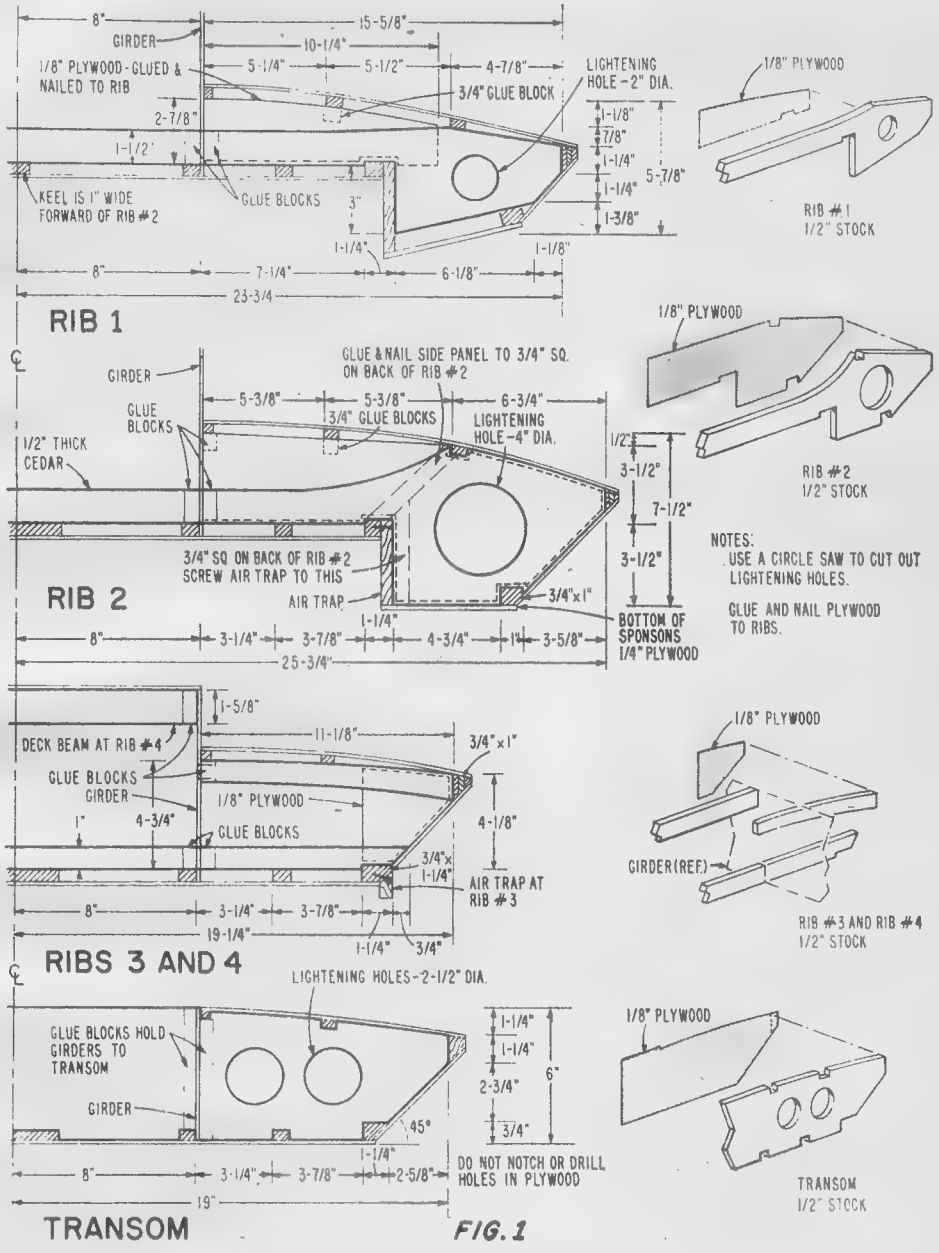


FIG. 1

Transom and four ribs are constructed first. Use a circle saw to cut out the lightening holes.

shape as the transom, but do not notch it or cut holes. Coat mating surfaces with glue, and nail the plywood in place with ⅝-in. #16 bronze boat nails.

Next make up ribs 3 and 4, which are identical. Note that each has a full-width bottom member, and two short upper members. Use ⅛-in. plywood gussets at the outer ends, glued and nailed in place, to give the ribs their full shape as shown in Fig. 1.

Rib 2 is quite important, as it not only establishes the full width of the hydro, but makes up the back of the sponsons as well. The main structural unit is cut from solid ½-in. stock, and is notched for keel and battens. A large lightening hole is cut at each end. Cut a ⅛-in. plywood panel to shape for each end of the rib, and glue and nail in place on the back of the rib. Note that ¾-in. square stock must be glued and nailed to the back side of these panels as shown by the dotted lines. The lower block takes the fastenings for the air trap member, and the hull sides fasten to the upper, slanted block.

Finally, make up Rib 1, also of ½-in. stock, with a ⅛-in. plywood panel glued and nailed in place so the deck battens can be fastened to it.

The two main girders are the heart of the craft, so take special care with them. They must be exactly the same size and shape, so it's best to clamp them together to trim them to shape, and to cut the notches for ribs. Shape and dimensions are shown in Fig. 2.

Now set up your building jig. This is two 8′ lengths of 2-in. x 4-in., securely fastened to provide a comfortable working height. They can be set up on saw horses or a workbench, for example. The two lengths should be exactly parallel, with a 16-in. distance between their outer edges. They

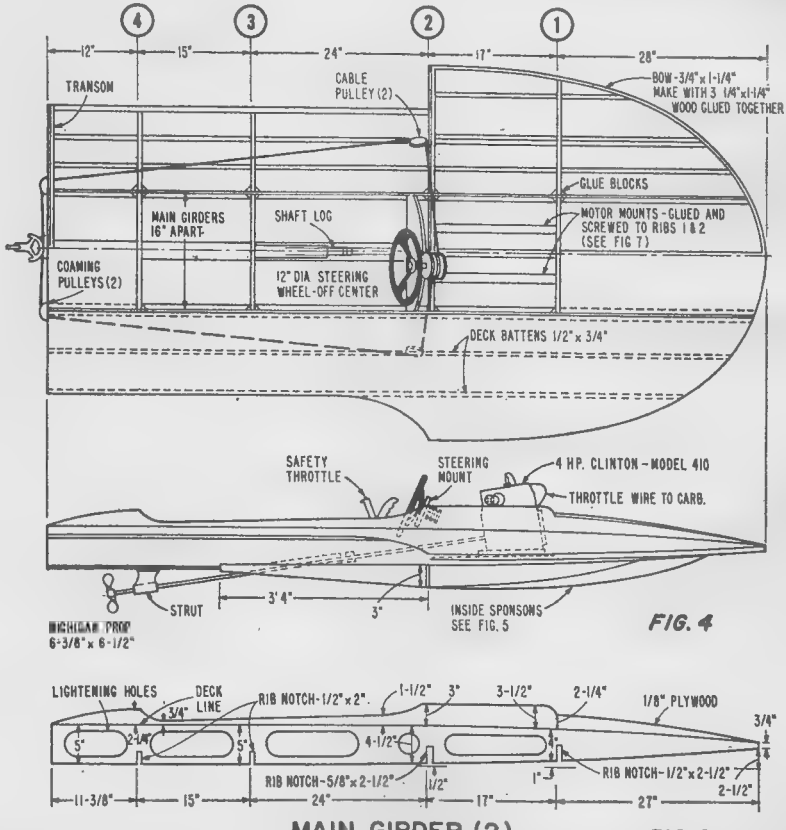


FIG. 4

MAIN GIRDER (2)

FIG. 2

can be clearly seen in the photo, Fig. 3.

Clamp the two girders to the outside of the jig, as shown in Fig. 3. Adjust them carefully so they are at the same height, and the rib notches are in proper alignment. Fasten the transom to the girders with ¾-in. square glue blocks on the outside ends of the girders. Slip each rib into its proper notches, and fasten it with triangular glue blocks. Nail transom and ribs in place with 1-in. wire nails.

Make up the keel of ½-in. stock. Note that it is 4-in. wide back of Rib 2, in order to accept the shaft log. Forward of Rib 2 it is only 1-in. wide. Set it into its notches on the transom, use glue on mating surfaces, and fasten with two 1-in. flathead wood screws at each joint. Be sure to countersink for the heads, and drill

Fig. 3: Here framing is complete except for sponson chines. Clearly seen are 2x4's that make up the building jig. Note heavy pine clamps holding the bow.

pilot holes.

Install the bottom battens. The center battens extend forward of Rib 1, as shown in Fig. 3 and the drawing, Fig. 4. It is not necessary that they extend all the way forward to the bow. The two inner battens fasten to the main girders, as well as to the ribs. Fasten with glue and nails at each joint.

The bow piece that bends around the front of the boat and along the sides of the sponsons is made up of three pieces of ¼-in. x 1¼-in. cedar. Glue is applied to them, and they are bent as a unit, while the glue is wet, around the frame and are fastened to ribs, girders, and battens. Use plenty of clamps, as shown in photo, Fig. 3, until the glue is dry.

Use solid ½-in. stock for the inside sponson pieces, cut to the shape shown in Fig. 5. Clamp the two pieces together and trim to exactly the same shape before installing them with glue and nails to the outer battens (chines) and to ribs 1 and 2.

Use ¾-in. x 1-in. stock for the outside sponson battens. These take a considerable bend near the bow. Soak the front section of these in hot water so they will take the bend with ease. They are glued and nailed to ribs 1 and 2, and to the bow piece.

Carefully fair all the framework so plywood bottom side, and sponson planking will lie flush against it. Sponson members can be faired with a hand plane, then trued with a file, or with coarse sandpaper on a sanding block.

Plank the two sides first, behind the sponsons. Clamp a section of ⅛-in. plywood in place, trace the outline on it, remove it, and cut the panel to shape, but slightly oversize. Coat mating surfaces with glue, and nail each panel in place with ⅝-in. #16 bronze nails, spaced about 2-in. apart. Trim the panels flush with the framework. The two sponson chine panels are made up and installed in the same manner. Note that on each sponson the ¼-in. bottom panel will overlap these side panels behind Rib 1, and will butt against the edge of the side panel forward of this rib.

Now make up the bottom panel. This is a single length of ⅛-in. plywood, 32-in. wide (it can be made up of two shorter lengths, with a butt joint, if necessary). Clamp it in place, mark the outline of the outer edge of the bow, and from inside the boat, mark the outline of all battens, keel, etc. Remove the panel and trim the bow to shape. Use a small bit—1/16-in. is fine—and drill pilot holes for nails in the spaces marked for battens and other members.

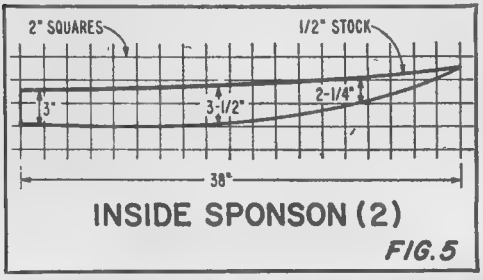
Check your framework carefully, to make sure it is squared and true. Coat mating surfaces with glue, clamp the panel back in place, and nail the panel to the framework through the previously drilled holes. Have someone hold a weight under the framework where you are working so the nails will seat solidly.

Now the shaft hole can be drilled. Screw a block of wood in place temporarily on the keel inside the boat, where the drill

EL CID

will come through. This will prevent the keel member from splintering when you drill. Use a scrap of plywood to make up a template that gives you the proper angle, and nail it in place lightly on the keel alongside the center line on the outside of the hull. Use an auger with a ⅞-in. bit, after notching the keel with a wood chisel to allow the drill tip to get a good bite. Be sure to keep the bit aligned with your template.

Remove the template, unclamp the girders from the building jig, and turn the boat upright. Remove the temporary block from inside on the keel, and install the shaft log; make sure it is aligned with the hole.



INSIDE SPONSON (2)
FIG. 5

The steering mount is a 16-inch length of ¾-in. stock, 4-in. wide. Glue and nail it in place at an angle between the girders, above Rib 2. See photo, Fig. 6. The hole for the wheel shaft should be slightly off-side to the right. Install the deck battens in the same manner as the bottom battens and add the steering wheel pulleys. These must be bolted—not screwed—to Rib. 2. Give the entire hull interior three good coats of paint or varnish, as desired.

When the interior is dry, deck panels can be cut from ⅛-in. plywood, and glued and nailed in place in the same manner as the bottom and side panels.

Turn your boat upside down again, and fasten the airtraps in place with screws through the planking into the framing. Install the shaft and strut; also install a sponson fin on the back of the left hand sponson, if you plan on making any tight turns. For general use, this should not be needed. Install the rudder mount and the transom pulleys.

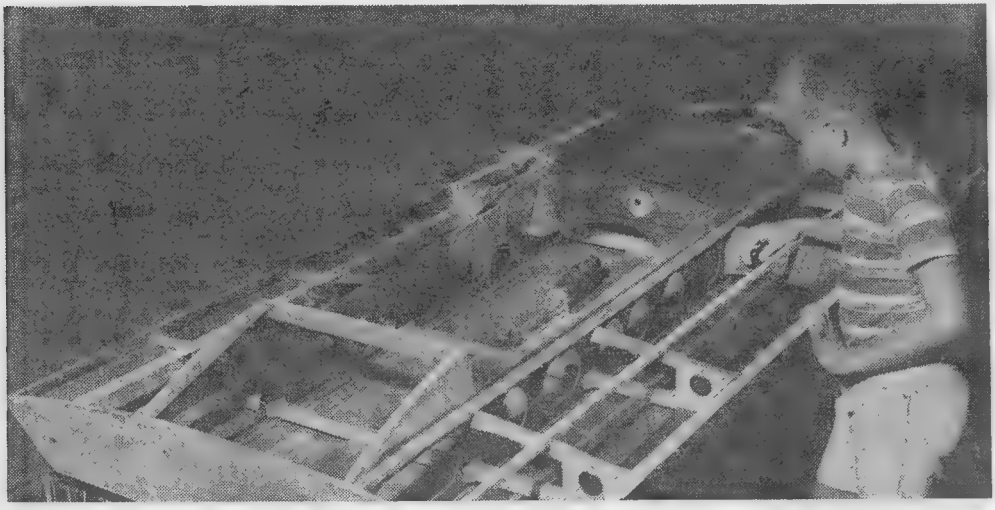
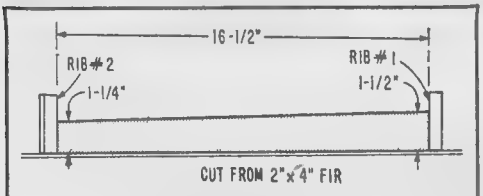


Fig. 6: Here the framework is right side up with shaft log and steering panel installed, as well as the deck beams and battens. Give interior of hull three coats of paint or varnish before you fasten the deck panel of boat in place.



ENGINE MOUNT
(2)
FIG. 7

Cut the two mounting blocks for the engine to shape, as shown in Fig. 7. These are glued and screwed in place between ribs 1 and 2, as shown in Fig. 4.

With the boat upright, the engine can be installed. It is the 4 H.P. Clinton, Model 110. Use care to get it set at the proper angle to the shaft, and bolt it to the engine mounts. A standard coupling can be used to attach the motor to the shaft. This will give you a straight drive, with no neutral or reverse, but these are not necessary on such a small boat. Mount the dead man's throttle on the left hand girder and attach its control wire to the engine. Rig the steering wheel and tiller lines.

Now the exterior of the boat can be finished with paint or varnish, as desired. Use at least three coats; allow each to dry thoroughly, and sand lightly before applying the next coat.

The standard JU racing class propeller can be used; it's a Michigan wheel, 6⅜-in. x 6½-in., and it lists for $32.00; the Michigan AG 7-in. x 6-in. propeller, which lists at $11.50, will provide just about the same speed. ■

BILL OF MATERIALS—EL CID

Quantity	Size	Material	Use
3	⅛" x 4' x 8'	Plywood	Bottom, side, deck planking
1	¼" x 4' x 8'	Plywood	Sponson bottoms
4	½" x 12" x 8'	Cedar or Spruce	Framing
1	¾" x 1½" x 10'	Cedar or Spruce	Cut into strips for built-up bow piece
1 lb.	5/8" #16	Bronze boat nails	
1 lb.	1¼" #14	Bronze boat nails	
5 lb.		Wilhold marine grade plastic resin glue, or equiv.	
1 gal.		Paint or varnish	
1		Clinton 110 engine	
1	6⅜" x 6½" JU or AC 7" x 6"	Propeller	

The following items may be obtained from Williams Mfg. Co., 6450 Olympic, Bremerton, Wa. 98310, or Azuza Engineering, Inc., 16200 Arrow Highway, Azusa, Calif. 91702:

1		Safety throttle
	5'	Throttle wire
2	90°	Coaming pulleys
1		Cable pulleys
	13'	Steering cable
1	12"	Steering wheel
1	1'	Lifting handle
1		Shaft log
1		Strut
1	¾" dia. x 3'6"	Propeller shaft
1		Rudder assembly

• To obtain enlarged plan for building El Cid, Craft Print No. 372, see handy order form on last page of this issue.

Fig. 8: Bottom of the finished boat. Air traps are in place, as well as the strut, shaft, propeller and rudder assembly. Note sponson fin on back of the left sponson only—necessary for tight turns.

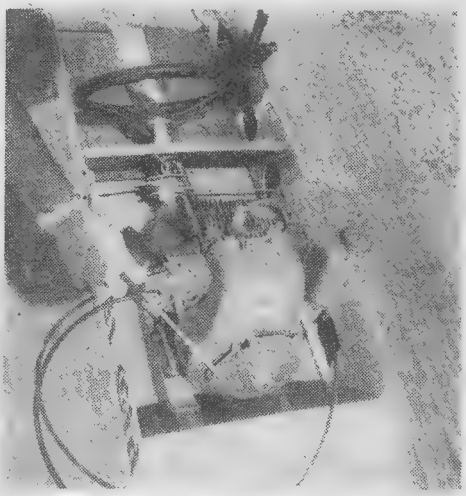
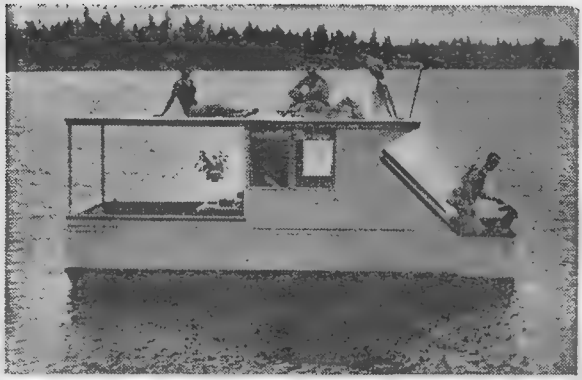


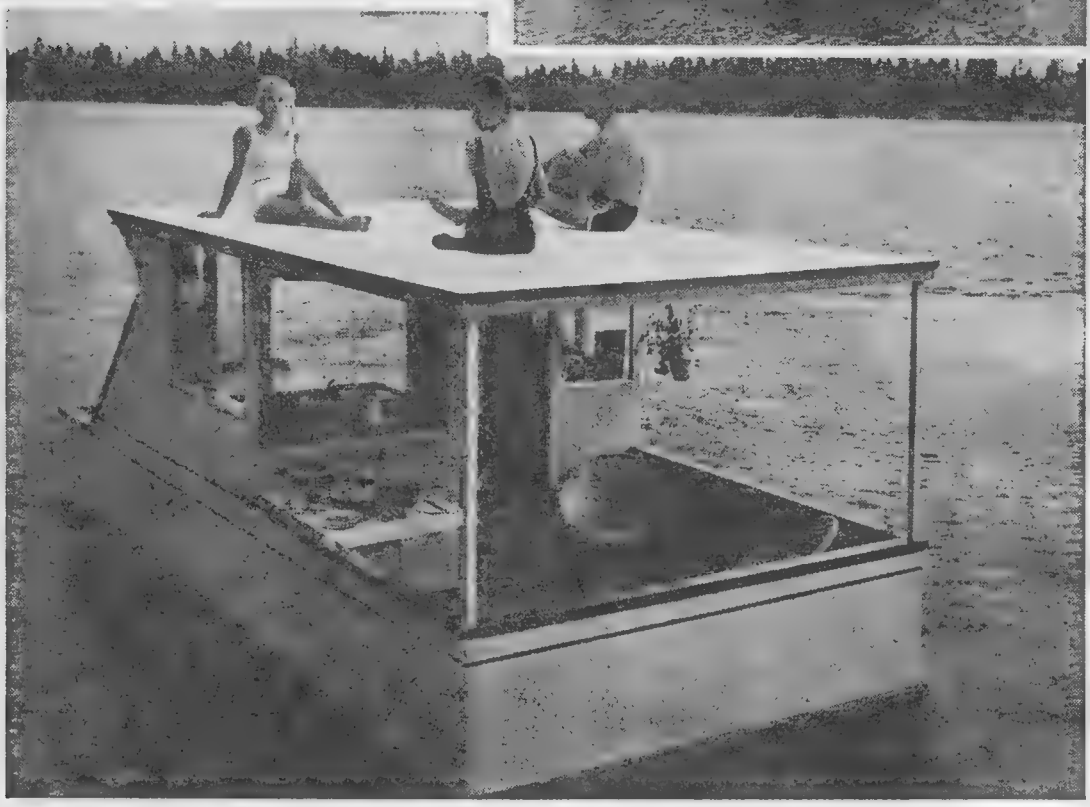
Fig. 9: Steering, dead man's throttle and engine installations of El Cid are seen in this photo. A gentle curve in throttle cabin allows it to operate without binding. Engine is a 4-horse model.

PARTI-O

Trailerable patio-craft that you can build provides semi-sheltered space afloat for summertime recreation

By FRANK C. BEESON



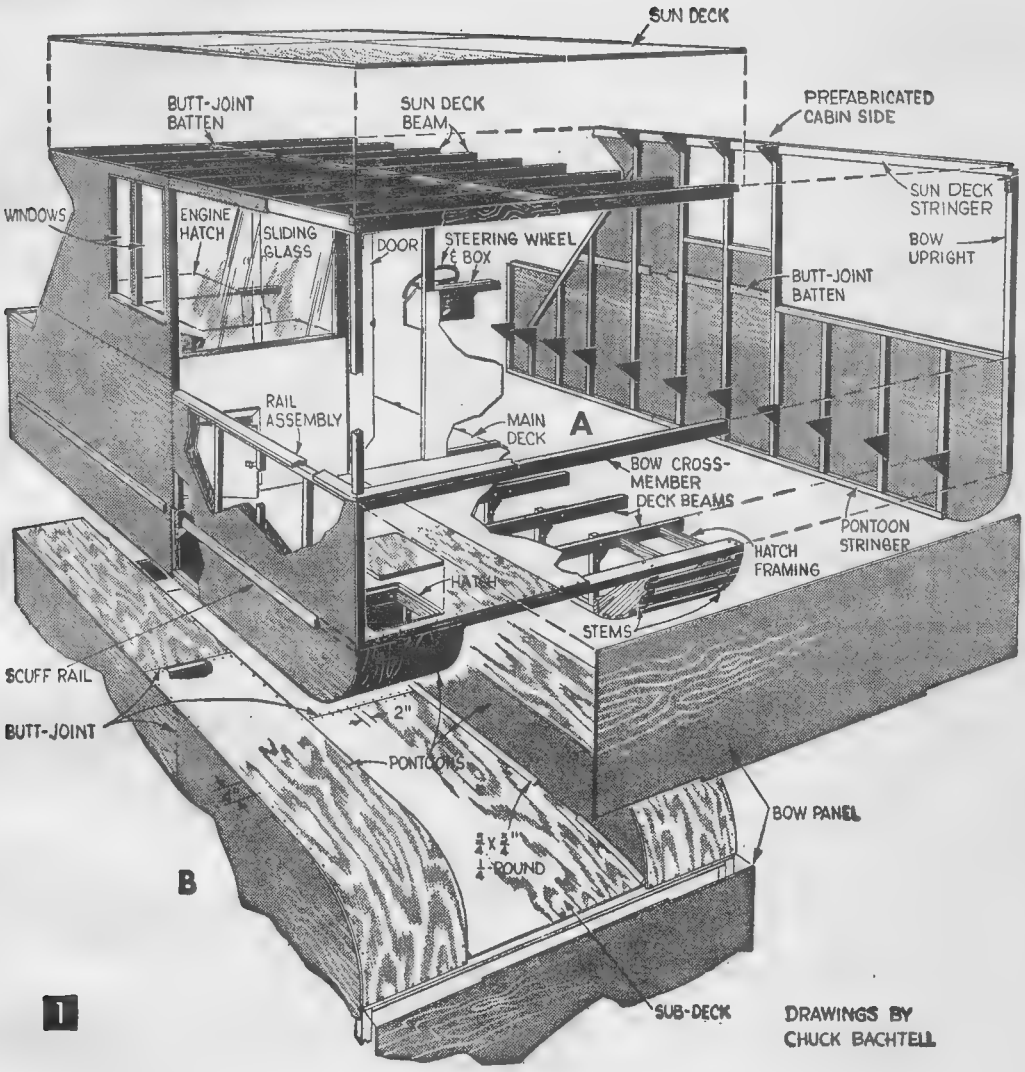


YOU can take the family on luxury cruises, entertain friends on weekends, or go on all-day fishing trips with this semi-sheltered, floating patio that you can build. It's great, too, as a swimming dock or for sunbathing—even for moonlight dancing parties on your favorite lake or river.

There are no compound curves in the construction and all materials are available from your local lumberyard. Once the basic structure—made up of the lumber frame and the main plywood panels—has been completed, you can choose finishing touches and trim from among materials most readily available to you and best suited to your budget. The original Parti-O was outfitted with an 18-*hp* outboard engine.

Begin construction by cutting the plywood panels according to Fig. 1. The panels will determine the basic dimensions of the hull, each combined with framing to become a prefabricated panel. For economy the panels can be made up of shorter lengths joined either on the centerline of an upright or with butt battens as in Fig. 2E. Stagger butt joints where used so those in the cabin and those in the pontoons are several feet apart horizontally.

Next glue and nail the stringers (Fig. 2A) to the pontoon bottoms, setting them in ⅜ in.



from each edge to allow the side panels to butt against the pontoon bottoms (Fig. 5). Make sure the joints in the stringers do not coincide with joints in the plywood. When finished, set these aside while the glue dries and you continue work on the side panels.

With the lower cabin sides propped in a vertical position, clamp the uprights (Fig. 2) to them, using a piece of 2x2 stock along the lower edge to position the ends of the uprights so they will butt on top of the stringers when assembled. Be sure the uprights are spaced accurately, parallel to each other, and that the two sides are identical, then attach them to the plywood with glue and ringed nails. Go on to attach the remaining panels to complete each side and then make up the inboard pontoon walls (Fig. 1B) in the same way.

After components are constructed and the glue has dried, set the pontoon bottoms on sturdy saw horses, high enough to allow you to work on the underside of the hull. Then, with the help of friends, set the side panels in place two at a time and brace them with pieces of scrap lumber nailed between them.

Join the pontoon bottom and side panel assemblies by coating the contacting surfaces with glue, applying a thick bead of rubber sealer in the outside joints, and then securing

with ringed nails. Before the glue dries, set up the inboard pontoon walls in the same way, and then install the main and sun deck beams, using carriage bolts and plywood gussets glued and nailed to the framing (Fig. 5).

Next cut the stems (Fig. 2F) to shape from 2x8 stock and attach them to the crossmembers with glue and screws. Notch the curves for 1x2 crossbracing and attach these in the same way.

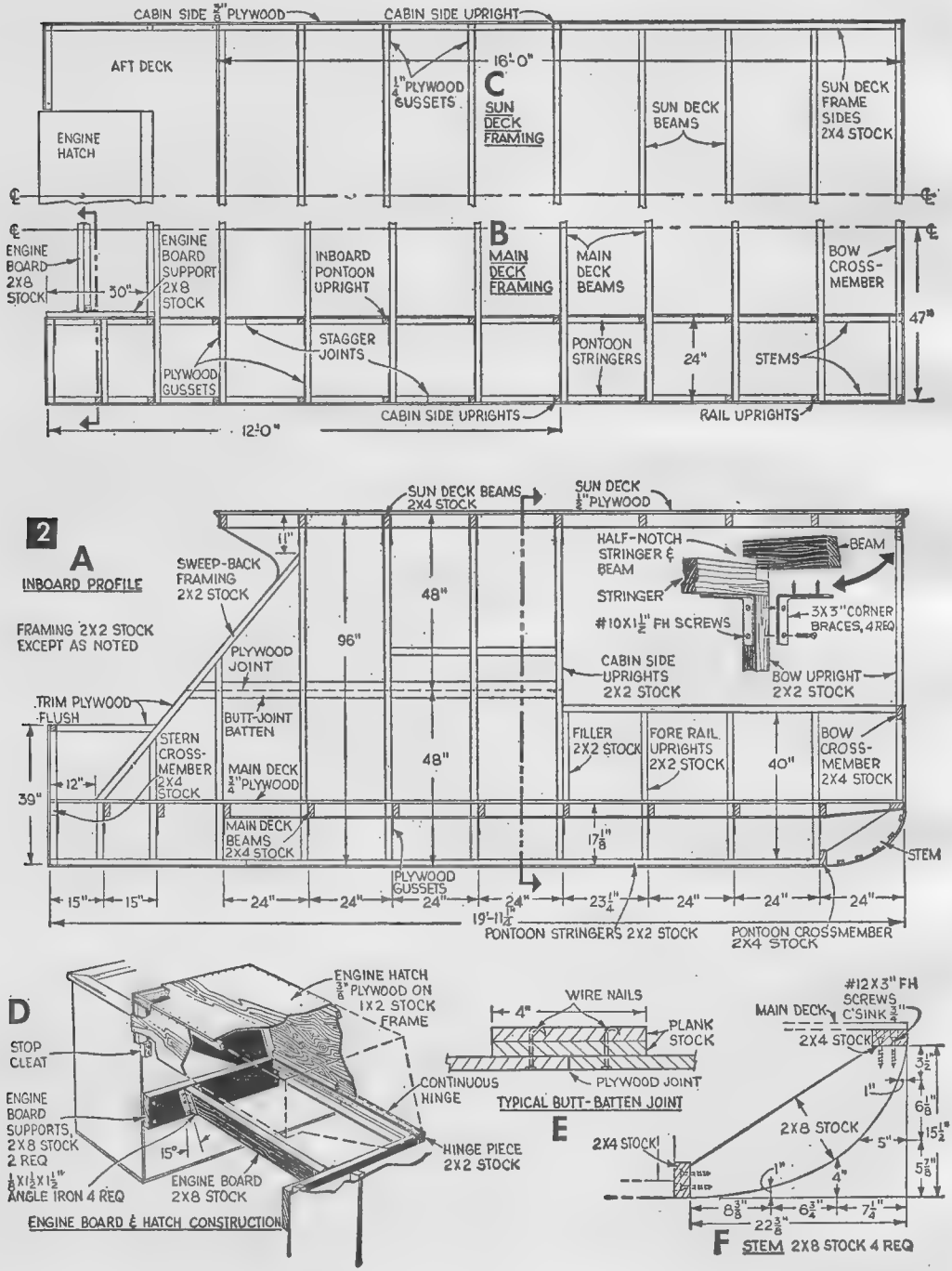


FIG. 3: Many striking schemes for interior trim can be made from materials on hand such as oil-tempered pegboard, suiting Parti-O to your purpose, budget.

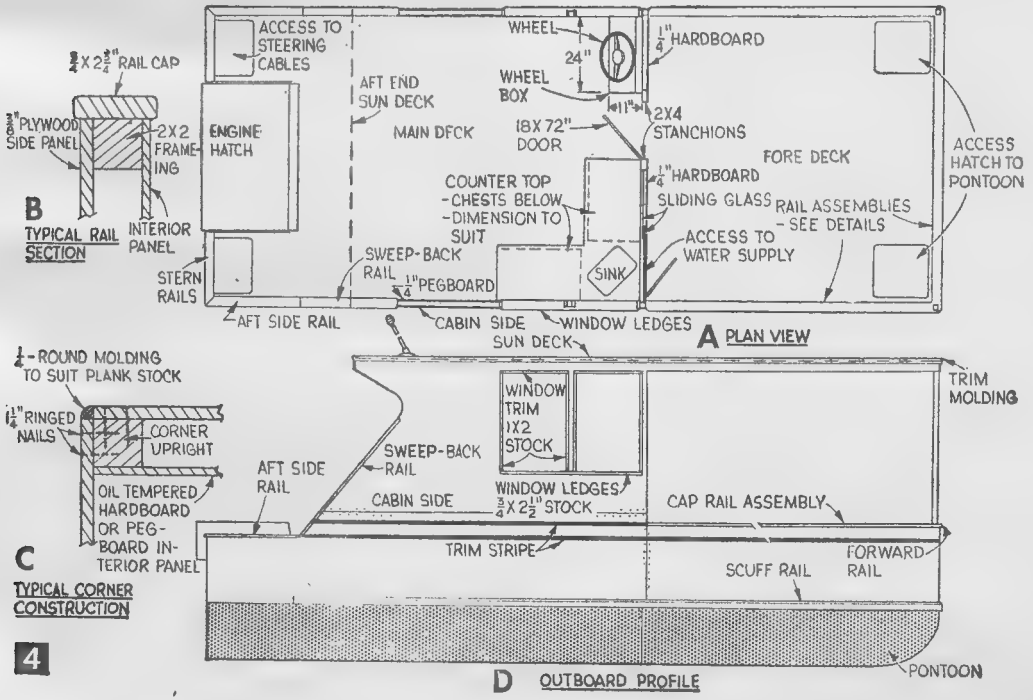
As next step, clamp the assembly in place while you bend up the fore ends of the pontoon bottoms and secure them with sealer and ringed nails spaced 2 in. apart. Soak the plywood for bending by covering overnight with wet turkish towels.

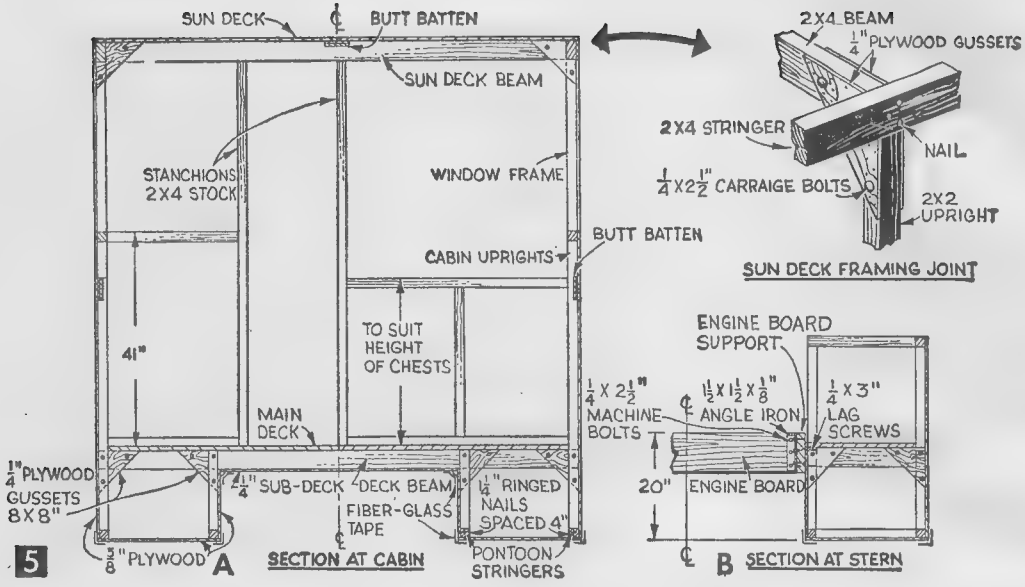
Frame the transom of each pontoon as in Fig. 5B and then install the engine mount assembly using lag screws and angle iron bracing. Notch the fore ends of the engine mount supports to take a 2x2 crossmember to which the hinge for the engine hatch can be fastened.

Next get underneath to install the subdeck and apply 4-in. widths of fiber-glass tape (Fig. 5) to the plywood joints. If your version of Parti-O will be beached often, attach 1x2 scuff strips to the edges of the pontoon bottoms.

If you wish, solid billets of flotation material can be cut and set into pontoons now or, if the liquid foam is to be used, it can be poured in through the hatches (Fig. 4D) after the main deck is in place. In either case, you are now ready to install the main and sun decks (Fig. 1), using glue and screws to attach them to the beams. Locate the hatches and cut them before laying the main deck so the hatch framing can be fitted between beams.

Before working on the interior, obtain a pair of chests of a convenient height to serve as base for the counter (Fig. 4D). Set them





in place as a guide and then cut the counter top, setting your sink into the space between the chests.

Rip 1x6 stock into two equal widths and use this to cap the railings, cabin sweepback, and window ledges (Fig. 4B). If desired, contrasting molding can be added in whatever sort is most readily available. Prepare the rail caps for varnishing by rounding and smoothing with a plane and sandpaper.

Construct the wheel box (Fig. 4) from ¾-in. plywood or lumber and then install your choice of fittings and instruments. Also make up a hatch for the engine from ⅜-in. plywood glued and nailed to 1x2 framing. The actual dimensions of these parts will vary to suit the engine and equipment you have on hand or intend to use. Tiller cables are run through garden hose so that repair can be made after the deck is installed.

If any amount of cooking is to be done aboard, sliding glass panels and a plywood door in the cabin front will provide a windbreak for this and a sheltered area for use on cool evenings.

Finish the plywood corners where necessary by installing quarter-round molding with glue and brads (Fig. 4C) and then apply two coats of plywood sealer and two coats of marine enamel to all surfaces, sanding between coats with progressively finer grades of abrasive paper.

Complete the project by adding trim lines and scuff rails (Fig. 4) of a contrasting color. Locate the scuff rails to suit the docks you will use most often. If Parti-O will be used in salt water, the bottom should be protected with a coat of copper anti-fouling paint.

MATERIALS LIST—PARTI-O

Amt. Req.	Size and Description	Use
	EXTERIOR PLYWOOD	
2	¾" x 4' x 12' fir AB plywood	main deck
2	¾" x 4' x 8' fir AB plywood	main deck
5	½" x 4' x 8' fir AB plywood	sub deck, transoms
3	⅜" x 4' x 12' fir AB plywood	aft cabin sides, fore pontoon bottoms
6	⅜" x 4' x 8' fir AB plywood	cabin sides, rails aft pontoon bottoms
	LUMBER	
	(Parentheses indicate stock sizes used when ordering lumber only.)	
1	(2x8) x 10' spruce or fir (Clear)	engine board and supports
27	(2x4) x 8' spruce or fir	deck beams, stanchions
15	(2x4) x 10' spruce or fir (ripped)	framing and stringers
5	(1x6) x 8' spruce or fir (ripped)	rail caps, scuff rails framing
	FASTENINGS & MISCELLANEOUS	
6 lbs.	#12 x 1¼" Anchorfast ringed nails	
4 lbs.	#12 x 1½" Anchorfast ringed nails	
1 gal.	phenolic-resin waterproof glue	
1½ gal.	Plywood sealer	
2 gal.	marine enamel	
1 qt.	liquid rubber sealer	
4	1½ x 1½ x ¼ angle iron, 7" long	
15 doz.	¼ x 2½" carriage bolts w/nuts and washers	
3	⅜ x 3" lag screws	
1 doz.	#12 x 3" *fh* galvanized wood screws	
1	steering wheel kit with 30° mount and cables	

MISCELLANEOUS: hardboard panels, chests, moldings, sliding glass with track, sink with water tank and pump, lights and safety equipment as required by U. S. Coast Guard.

• To obtain enlarged plan for building Parti-O, Craft Print No. 352, see handy order form on last page of this issue.

Once you get the knack of handling a double paddle you'll be able to propel this kayak along the shallow waters of a river with less effort than it takes to walk.

Shallow Draft HUNTING KAYAK

If you want to explore for game in the shallow back waterways (where noisy motorboats can't go), this two-seater is for you

Craft Print Project No. 300

FOR many years a favorite of hunters, trappers and traders in this country, the kayak now is as popular with Europeans as the outboard boat is with Americans.

Although this boat was designed to carry two people, it will accommodate three in a pinch, and gear may be stowed under fore and after decks. A few strokes with the double paddle (Fig. 1) will send it gliding across the water with the minimum of effort on your part. Kayaks are surprisingly seaworthy, too—more stable than a canoe, in fact, because the occupants sit on the bottom of the hull which lowers the center of gravity.

Materials for building this kayak will run around $25, and it will take about 25 hours of work if you are reasonably skilled in wood working. First make the building form, consisting of two A frames and a strongback, as in Fig. 3. Select a straight, well-seasoned 16 ft. 2 x 4 for the strongback and when laying out the tapered ends bend a ½ x ¾-in. batten against nails driven at measured points as in Fig. 3A.

If you have a portable jigsaw, cut strongback along the curved line, or saw straight and hand plane it to the curved line. Then lay out and cut the ¾ x 1¾-in. notches for the frames and saw off both ends at a 45° angle. Cut and toe nail the 2 x 4-in. stem blocks to the bottom of the strongback at each end to provide additional support for fastening the bow and stern stems to the strongback later. Now assemble the A frames to the strongback 56 in. on each side of center with nails.

You are now ready to start making the kayak hull framework which will be assembled upside-

STATEMENT OF USES

USES: Two-place, flat-bottom kayak for hunting, fishing and general sports use on protected waters of small lake or river.

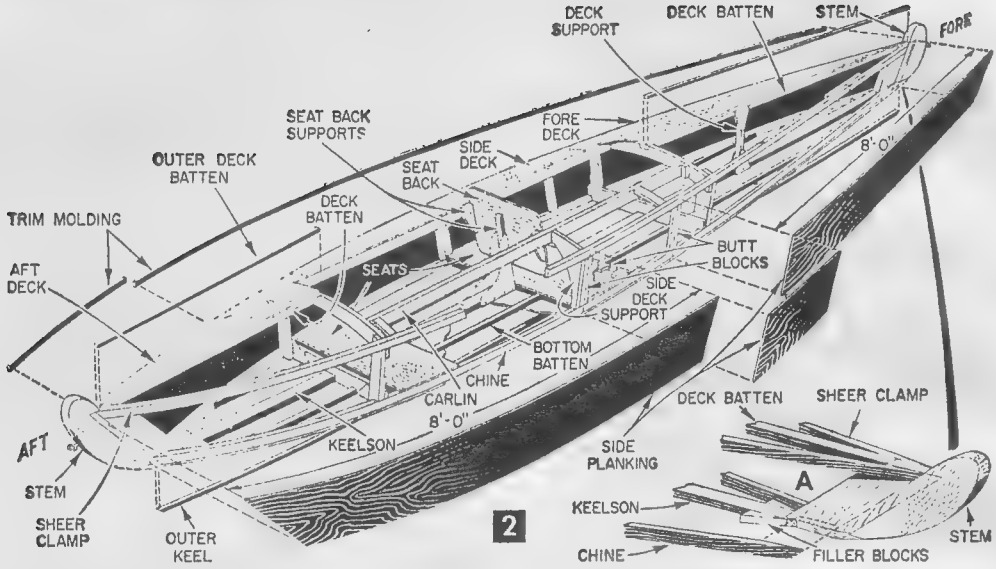
LENGTH: 18 ft.

BEAM: 40 in. to outside molding.

DEPTH: 11 in. sides.

WEIGHT: 100 lbs.

CONSTRUCTION: Exterior sheet plywood over wooden framework.



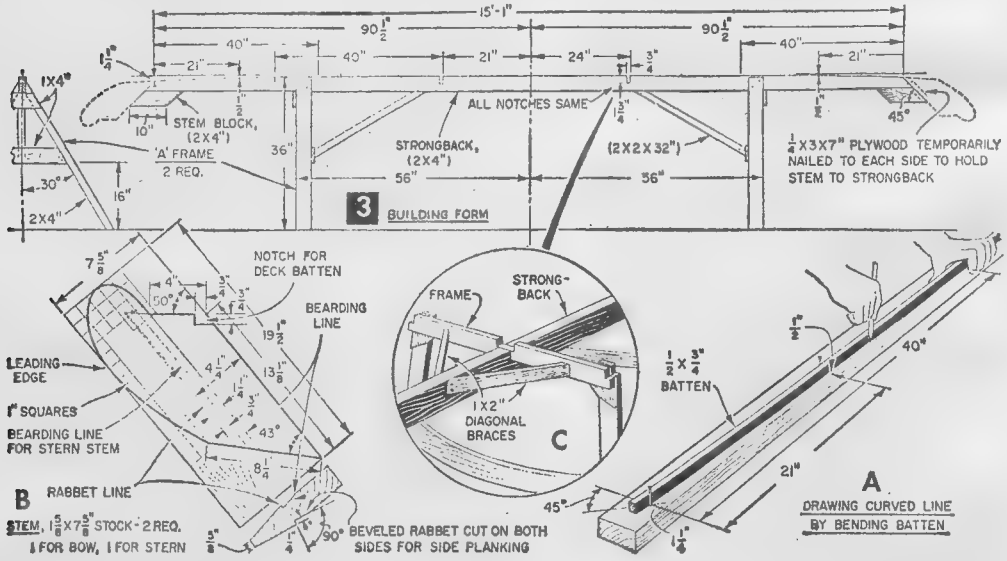
down on the building frame.

Starting with the stems (Fig. 3B), make a full-size drawing of one on heavy paper and cut it out. Using it as a pattern for both stems, place it on the wood and draw around. After cutting the stems to shape with a jig or handsaw, again place the paper pattern on the stems and mark the location of the rabbet and bearding lines on each side of the stems with a series of nail point marks.

To cut the rabbet, first score along the rabbet line with a knife held at approximately a 10° angle. Make several passes with the knife to make the cut ¼ in. deep. Then use a 1-in. chisel to cut the beveled rabbets along the bearding lines. Note in Fig. 3B that the bow stem has a wider rabbet than the stern stem.

After cutting the rabbets, bevel the fore end of the sides with a plane until the center of the curved leading edge is ⅝ in. thick. Fasten the stems to the ends of the strongback with 3 x 7-in. pieces of ¼-in. plywood temporarily nailed on each side as in Fig. 3. Do not use screws because these pieces must be taken off to remove hull from building frame when completed.

Make up the frames (Fig. 4) next. Numbers



1 and 3 frames are permanent frames, and remain in the boat when finished. The #2 mold frame is removed from the hull just before the decking is installed.

First make a full-size drawing of each frame (Fig. 1) on wrapping paper. Transfer the outline of each frame piece by placing the wood it is to be cut from under the paper pattern and punching a series of indentations along the drawn lines with a nail or toothed wheel such as a dressmaker's or leather crafter's wheel. After removing the pattern, draw pencil lines along indentations and saw to marked shape.

Assembling the Frames. Place the frame pieces in their respective places on the paper drawings so that they will be properly positioned in relation to one another. Fasten the mold frame together with nails, and use waterproof glue, 1-in. nails and #8 x 1¾-in. *fh* screws on frames #1 and 3. Note in the end view of #1 and 3 frames (Fig. 4), that the ¼-in. plywood gussets are placed between the bottom and side frame members.

Do not fasten the curved deck beams to #1 and 3 frames at this time. When the glue has dried, cut notches on all frames for chine, keel and sheer clamps as dimensioned on #1 frame. Then place the frames into the notches cut in the building frame strongback, center and square them, and fasten with 1 x 2-in. diagonal braces temporarily nailed in place (Fig. 3C).

Next, rip saw the 2-in. wide keelson and 1¼-in. wide chines and sheer clamps from a single 18 ft. length of 1 x 8-in. fir stock. If you have trouble locating an 18-ft. length (16 ft. is the longest stocked by many yards), use a 16-ft. length and add a short piece on the end. Back up the added piece for the sheer clamps with a 10-in. length of the same size stock as in Fig. 5. No back-up piece is needed on keelson and chines. Use a combination circular-saw blade for ripping this stock so you will not have to plane the saw-cut edges smooth.

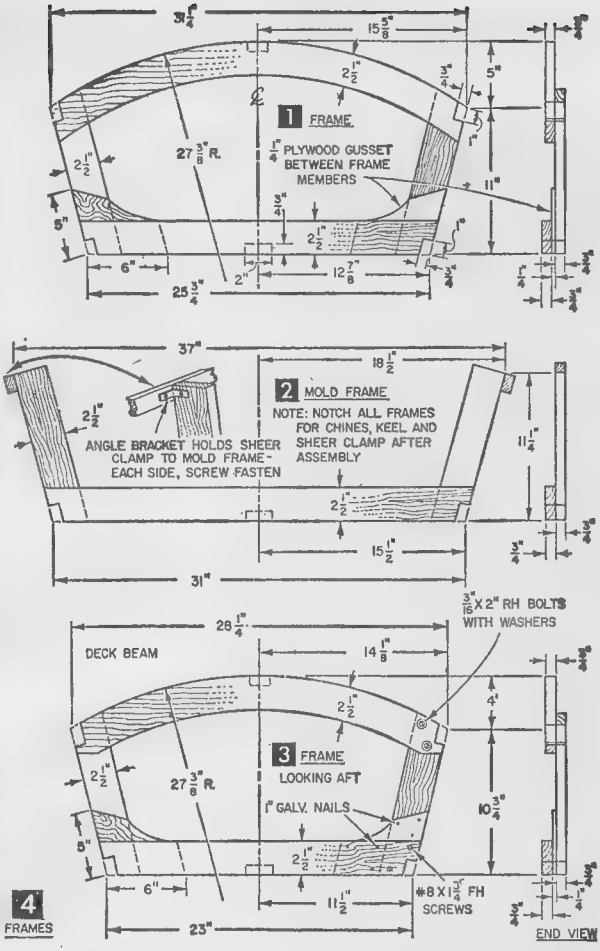
Fit the keelson in the frame notches and draw the ends down against the strongback with C-clamps. If everything fits well, remove the keelson, coat frame notches and stems with glue and reinstall the keelson, fastening with two #8 x ¾-in. *fh* screws to frames and stems (but not to mold frame #2). Plane the ends flush with the stem sides.

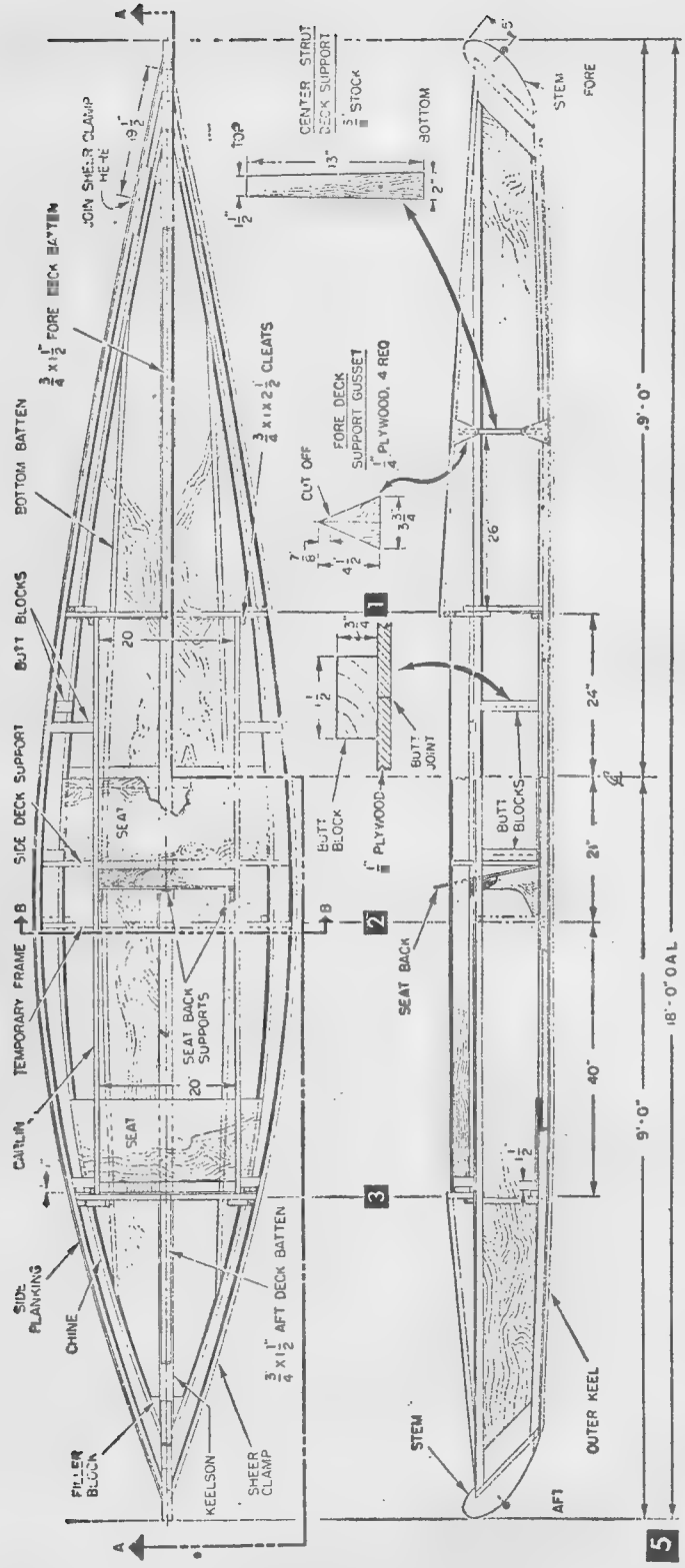
Installing the Chines. Temporarily bend and clamp the chines in the notches cut in the frames. You will notice that the notches on the #1 and 3 frames will have to be beveled slightly for a good snug fit with the chines. This you can do quite easily by running a handsaw between the chines and frame notches. Several cuts may be needed to completely bevel the frame notches. With the chines still clamped in place, mark the ends for tapering so that they will fit snugly against the keelson and stems.

When sawing the chine ends, cut them slightly oversize so you will have stock left for trimming to the exact angle of taper. Mark and cut the filler blocks (Fig. 2A) and fasten with glue and screws to the sides of the keelson. Fasten the chines to the stems, filler blocks and #1 and 3 frames with glue and one #8 x 1¾-in. *fh* screw at each frame and two screws at the stems. Toe nail the mold frame to the chines so the nail heads will be on the inside of the hull and can be removed later.

Follow the same procedure used when fitting and fastening the chines when installing the sheer clamps (Figs. 2 and 3). Cut notches in the bottom frame members to take the ¾ x 1-in. bilge battens and fasten to #1 and 3 frames and chines with glue and #8 x 1¾-in. *fh* screws. Do not fasten to the mold frame.

The most difficult part of the framing is now over and you are ready to fair the framing mem-



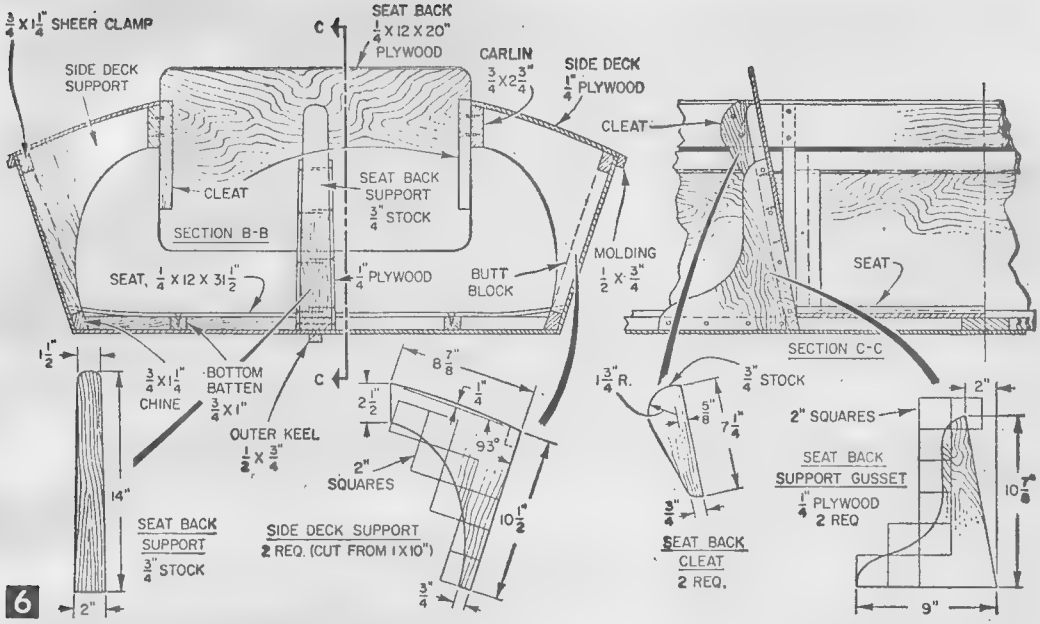


bers flush with one another so the plywood covering will make good gluing contact. Use a jack plane and large wood rasp for fairing. Sighting along the bottom edge of a straight edge held across the adjoining frame members will indicate the high and low spots.

Planking the Bottom. One 4 x 8-ft. panel of ¼-in. plywood will cover the entire bottom when cut as in Fig. 8. Place the plywood panel on the fore end of the framework first, centering the 4-ft. ends along the keelson. Then pencil mark it on the underside along the chines. Remove and cut to shape with a portable jigsaw. Use the two cut-off pieces of plywood to plank the aft end of the bottom joining them along the keelson as in Fig. 9. Fasten with glue and ⅞-in. serrated boat nails or #6 x 1-in. *fh* screws spaced 2 in. apart. Do not fasten to mold frame. Where the fore and aft planking join, place a ¾ x 2-in. butt block between keelson and chines (Fig. 5) on the inside of the hull and fasten with glue and nails or screws. When the glue has dried, plane the edges of the plywood flush with the sides of the chines.

Cut four 14 in. wide pieces of ¼-in. plywood as in Fig. 8, and two 13 x 24-in. plywood pieces to plank both sides of the hull. The two 13 x 24-in. pieces are fitted between the 8-ft. lengths amidships as in Fig. 2. Start by applying the four long lengths to the fore and aft ends, carefully cutting and fitting them into the rabbets on the stems. Instead of glue use *Tarp Seal*, a neoprene sealer, on all contact surfaces and fasten with screws or nails as you did the bottom planking. Carefully fit the 20-in. lengths amidships, using ¾ x 1½-in. butt blocks between chines and sheer clamps to back up the vertical seams. Then plane the edges of the plywood flush with the bottom planking, and remove the hull from the building form. Turn it right side up and place upon saw horses so it will be at a convenient working height.

Now take the previously cut deck beams for the #1 and 3



frames and fit and fasten them to the frames with glue and two 3/16 x 2-in. *rh* bolts at each side as in Fig. 4. Use washers under bolt heads and nuts. With these members in place, knock out the mold frame and remove it.

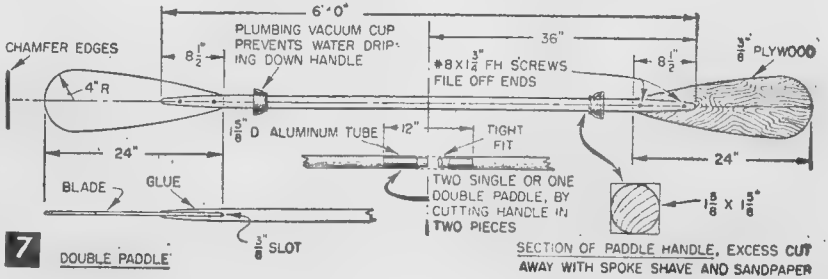
Fore and aft deck battens (Fig. 5) are next. Notch them flush into the deck beams and stems, and fasten with one #8 x 1¾-in. *fh* screw at each joint. Reinforce the fore deck batten with a strut extending from batten to keelson (Fig. 5). Fasten strut with ¼-in. plywood gussets glued and nailed in place.

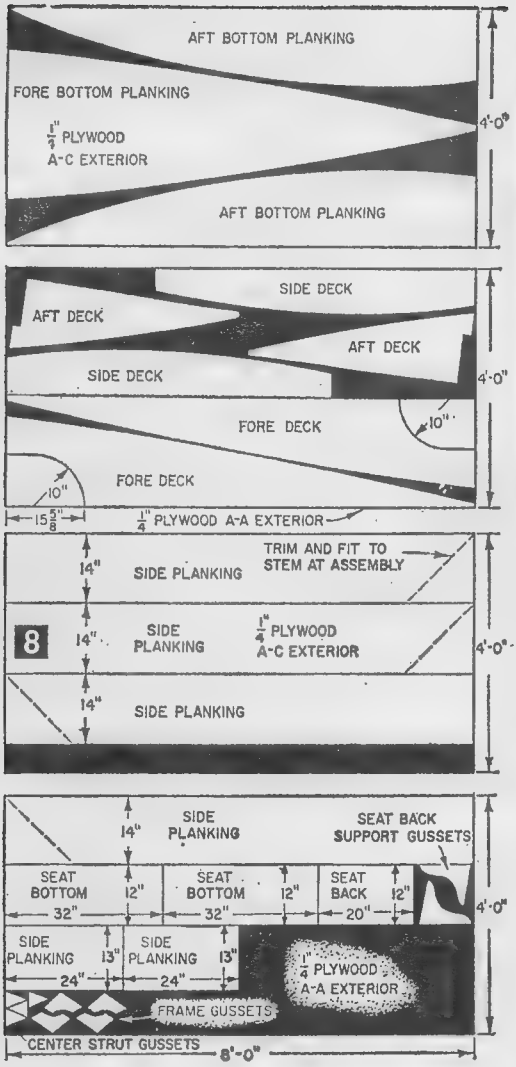
Deck Supports. To support the side decks and carlins amidships, make up two deck support pieces from ¾-in. solid stock (Fig. 6). Assemble them inside the hull and against the aft side of the butt blocks nearest the stern (Fig. 5). Fasten with glue and #6 x 1-in. *fh* screws driven through from the outside of the side planking.

Rip two carlins (Fig. 6) from a single length of 1 x 6-in. stock 7 ft. long, Fit them between the #1 and 3 frame deck beams and against the side deck supports. Allow the top edges of the carlins to project above the deck beams slightly, so they can be beveled to conform with the curvature of the deck beams. Fasten ends of carlins to deck beams with ¾ x 1 x 2½-in. cleats and #8 x 1¾-in. *fh* screws. Drill pilot holes for screws to avoid splitting the cleats. Use two #8 x 1¾-in. *fh* screws to fasten carlins to side

MATERIALS LIST—KAYAK

No. Reqd.	Size and Description	Use
	Plywood	
2	¼" x 4' x 8' AC grade exterior fir	bottom and sides
1	⅛" or ¼" x 4' x 8' A-A exterior mahogany or fir	decking
1	¼" x 4' x 8' A-A grade exterior fir	seats, gussets, sides
	Lumber	
1	¾" x 7⅝" x 18' fir or spruce	keelson, chines, sheer clamps
1	¾" x 5⅝" x 16' fir or spruce	carlins and frames
1	¾" x 3⅝" x 12' fir or spruce	deck and bottom battens
1	¾" x 3⅝" x 16' fir or spruce	molding and outer keel
1	¾" x 9⅝" x 8' fir or spruce	deck beams and side deck supports
1	1⅝" x 7⅝" x 36" fir or spruce	stems
1	1⅝" x 3⅝" x 16' fir or spruce	building form
	Fastenings	
2 lbs.	#12 x ⅞" stronghold boat nails or	
4 gross	#6 x 1" fh galv. screws (if above nails are not used)	
6 doz	#8 x 1¾" fh galv. screws	
2 doz	#8 x 1¼" fh galv. screws	
4	⅜" x 2" rh zinc-coated stone bolts with 8 washers	
2	⅜" screweyes	
1 pt	Tarp Seal or equivalent	
1 lb	Weldwood glue	
1 qt	Firzite (white)	
1 qt	spar varnish	
1 qt	marine enamel	





deck supports.

Now, give the entire interior of the hull two coats of white *Firzite* followed by one coat of marine enamel of your color choice. Do not paint the top edges of the deck beams, battens or sheer clamps, since the decking will be glued to these members. Fair off the top edges of the framework members with jack plane and rasp so that they will make good contact with the decking.

Decking. The original kayak was decked with ⅛-in. mahogany plywood. If this is not available in your area, use ¼-in. plywood, which will only increase the weight of the boat about 12 lbs. In either case, by carefully marking the fore, aft and side decks pieces as in Fig. 8, the entire hull can be covered with one 4 x 8-ft. panel of plywood. Fasten the deck plywood to framework with glue and #6 x 1-in. *fh* screws spaced 2½ in. apart. Use butt blocks under side decking seams.

After the glue has dried, plane the edges of the

One 4 x 8 ft. plywood panel cut into three pieces as in Fig. 8 covers entire bottom. Half of aft end remains to be covered here.

deck plywood flush along the sheer and carlin and install a ½ x ¾-in. molding along the sheer (Fig. 6), fastening with #6 x 1-in. *fh* screws spaced 6 in. apart. Cover the center seam on the fore and aft deck with a ½ x ¾-in. batten having a concave bottom shaped on a circular saw. Fasten with #8 x 1¼-in. *fh* screws spaced 6 in. apart. Use a ½ x ¾-in. strip for the outer keel (Fig. 6).

Two Seats. Make these from ¼-in. plywood 12 in. wide and fit each one in the hull so that the seats extend across from chine to chine. Fasten to keelson, battens and chines with three #6 x 1-in. *fh* screws in each member. Only the forward seat has a back rest; the rear of the cockpit serves as a back rest for the aft seat. Make the back rest for the forward seat from ¼-in. plywood and install between the carlins with the center support and cleats (Fig. 6).

Finish the outside of the hull with three coats of white *Firzite* followed by one coat of marine enamel of the color desired. If you have used mahogany plywood for the decks and seat back, apply three coats of spar varnish for a natural wood finish. Insert ⅜-in. screweyes in the fore and aft stems for mooring ropes.

Making the Paddles. The shafts for two double paddles can be ripped from the 2 x 4-in. stock used for the building form strongback. Round the shafts with a spokeshave and sand smooth. Slot the ends for the ⅜-in. paddle blades as in Fig. 7, and fasten blades to shaft with glue and #8 x 1¾-in. *fh* screws. Then saw off projecting ends of screws, and give paddles three coats of varnish.

• To obtain enlarged plan for building Hunting Kayak, Craft Print No. 300, see handy order form on last page of this issue.

Photos: Dorothy Harper

MOTORIZE YOUR CANOE

By Marvin Harper

Here's a handy device for those times when you'd like to put the paddles aside. You can make this sturdy motor bracket in an hour or less at an inexpensive cost of $3. It fits all types of canoes, too

Paddling a canoe can be a lot of fun but there are times when it's a relief to put the paddles aside and let a small outboard motor do the work. This sturdy little motor bracket will let you do just that.

You can make one in about an hour at a total cost of around $3.00 and the bracket will fit aluminum, fiberglass or wood canoes as well as some kayaks.

Start by laying the 3½'x2x4 cross-member on its side about 10" forward of the canoe's stern plate. Make sure that there is at least 13" of overhang on each side so the propeller will clear the canoe's side. Then, following the contour of the gunwale, mark the cross-member for notching. Remove and notch 1" deep. (Fig. 1)

Mark the holes for bolts and start drilling from the underside of the cross-member ½" in from the notched cut. Using a ⅜" wood boring bit, drill at an angle of about 10" toward the center.

Now take the two ¼" carriage bolts and place them in a vise, leaving the heads sticking up 1½". Use a hammer as shown (Fig. 2) to bend the shafts over to a 90°

angle.

Insert the bolts into the cross-member from the bottom side and center the angled portion of the bolts over the cutouts. Next hammer the bolts down into the 2x4 until they are flush with the surface. (Fig. 3) The grooves they form will keep the bolts from turning after they are tightened against the gunwale.

A brace connecting the cross-member with the canoe's stern plate keeps the mount from shifting during use. To construct this part, first make a pattern out of a 12x4" piece of cardboard. Notch one end until it slips onto the stern plate and angle the other end until it meets flush with the cross-member. Most canoes have a rope eyelet centered on the edge of the stern plate. If that's the case, simply cut the pattern to fit a little to either side of it.

Now cut the brace piece according to the pattern and position it on the cross-member. Secure with several finishing nails and apply two corner braces to each side as shown. (Fig. 4)

Some last minute trimming in the notched areas may be necessary before the completed motor mount will slip into position. This should be done before the mount is painted.

As constructed here, the mount will take a motor on either the right or left hand side. This is useful if both right and left handed people will be using the mount. Otherwise you may want to shorten the unused side 8 or 9".

Add a 6" flat metal strap for the motor clamps to tighten against (Fig. 5) and follow with several coats of exterior paint or varnish.

Now clamp on a 1 to 3 hp motor and you're ready for some easy canoeing. ■

Fig. 1. Notching cross-member 1" deep can be accomplished with a small electric saw.

Fig. 2. With hammer carriage bolts, employed as brackets, are bent to 90° angles.

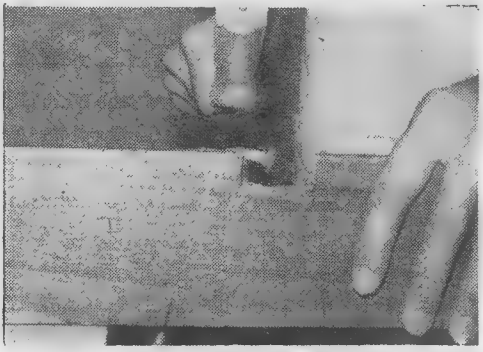


Fig. 3. The angled portion of the bolt is hammered into wood, forming ¼" depression.

Fig. 4. As shown two corner braces will secure the brace to the cross-member.

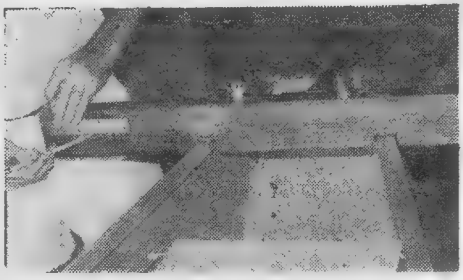
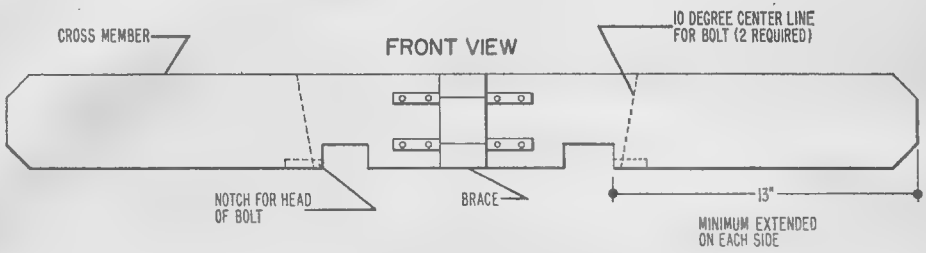
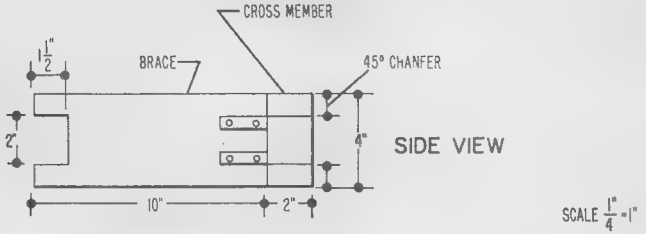
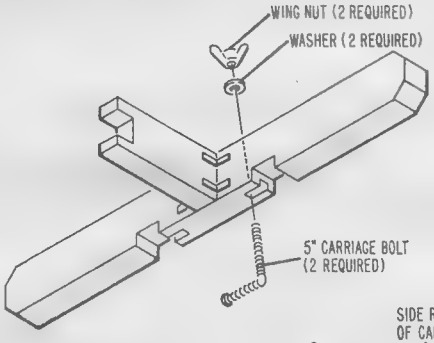


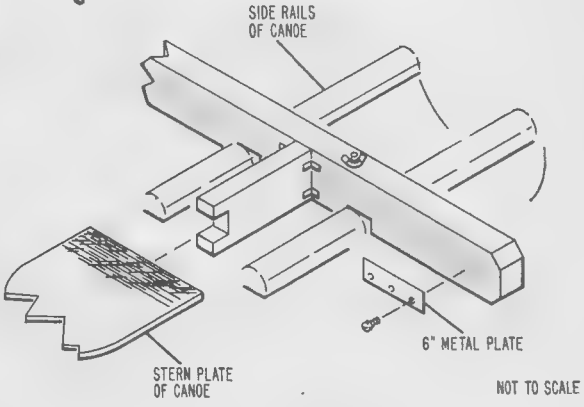
Fig. 5. Note that the 6" flat metal strap is located where the engine clamps down.







NOTE:
TOTAL LENGTH OF CROSS MEMBER WILL VARY DEPENDING ON CANOES WIDTH 10 INCHES FORWARD OF STERN PLATE



Materials List

Quan.	Description
1	2x4"x3½-ft. pine, top quality
1	2x4"x1-ft. pine, top quality
4	2" corner braces, screws
2	¼x5" carriage bolts with flat washers and wing nuts
1	6" flat metal mending strap
1 pt.	exterior enamel or varnish

Riviera is designed for the boat builder who is looking for a dependable boat that has power and class to spare.

RIVIERA

a 17-Ft. Inboard Runabout

Six-place luxury boat designed for ski towing and all water sports is powered by your choice of 100- to 225-*hp* auto engines converted for marine use

By WILLIAM D. JACKSON
Naval Architect

YOU can do more than just wish that you had a sleek, powerful, mahogany-decked runabout like Riviera. By constructing it yourself you can turn out this eye-appealing 38-*mph* boat that will be the pride of the lake and a treat to ride in, yet spend only ⅓ the price of even modest boats of the same size and power. You can further fit Riviera to your pocketbook by bargain hunting and using just the amount of trim you wish.

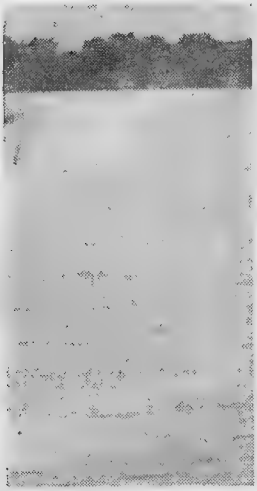
Although Riviera is up to date in design and is built to provide years of dependable service, I have used the same construction techniques that have proven themselves over and over in handbook boat projects.

First draw the centerline of the transom directly on ¾-in. fir exterior plywood and lay it out full-size as in Fig. 3, using the technique in Fig. 4 to draw the top and bottom arcs. To draw the faired curves at the frame sides, mark the end and center points and drive finishing nails partway at these marks. Bend a ¾-in.-sq. wooden batten against the nails as a guide when drawing the lines.

Next mark the shape of the bottom, side, and top framepieces, in that order, on 1 x 4 oak or fir stock, clamping it in place and tracing the transom edges on it. Cut the framepieces to shape, coat the contacting surfaces with glue, and attach them to the transom with #8 x 1½-in. flathead (*fh*) screws spaced 3 in. apart in a staggered double row. Also cut and fasten the center framepiece and the reinforcing blocks in the same way.

Next, using 6-ft. lengths of building paper and one of the 4 x 8-ft. plywood panels as a drawing board, draw centerlines and lay out each frame and deck beam full-size as in Fig. 3. Draw the arcs and faired lines with the same method used to lay out the transom.

To transfer the shape of the frame parts, slide the stock under the pattern and line up one edge with a straight line. Crease the paper slightly to keep the stock aligned while you run a toothed dressmaker's wheel along the pattern lines. Be sure to mark the centerlines of the assembly on each horizontal



framepiece.

To assemble the frames, lay the parts in place on the pattern to check their fit. Then insert triangular or, as in frames #1 and #2, rectangular pieces of ¼-in. plywood as gussets at the frame joints and trace the shape of the ¾-in. stock on them. Now coat the contacting surfaces with glue and drive three #8 x 1¾-in. *fh* screws through each joint. Fasten the exposed corners of the plywood gussets with 1-in. ringed nails and trim the outer edges flush with the frames.

Deck Beams. Frames #1, #4, and #5 have deck beams which are positioned and attached in the same way. Also frames #1 and #2 have 2-piece bottom members that are joined by ¾-in.-thick lumber plates attached with glue and #8 x 1½-in. *fh* screws.

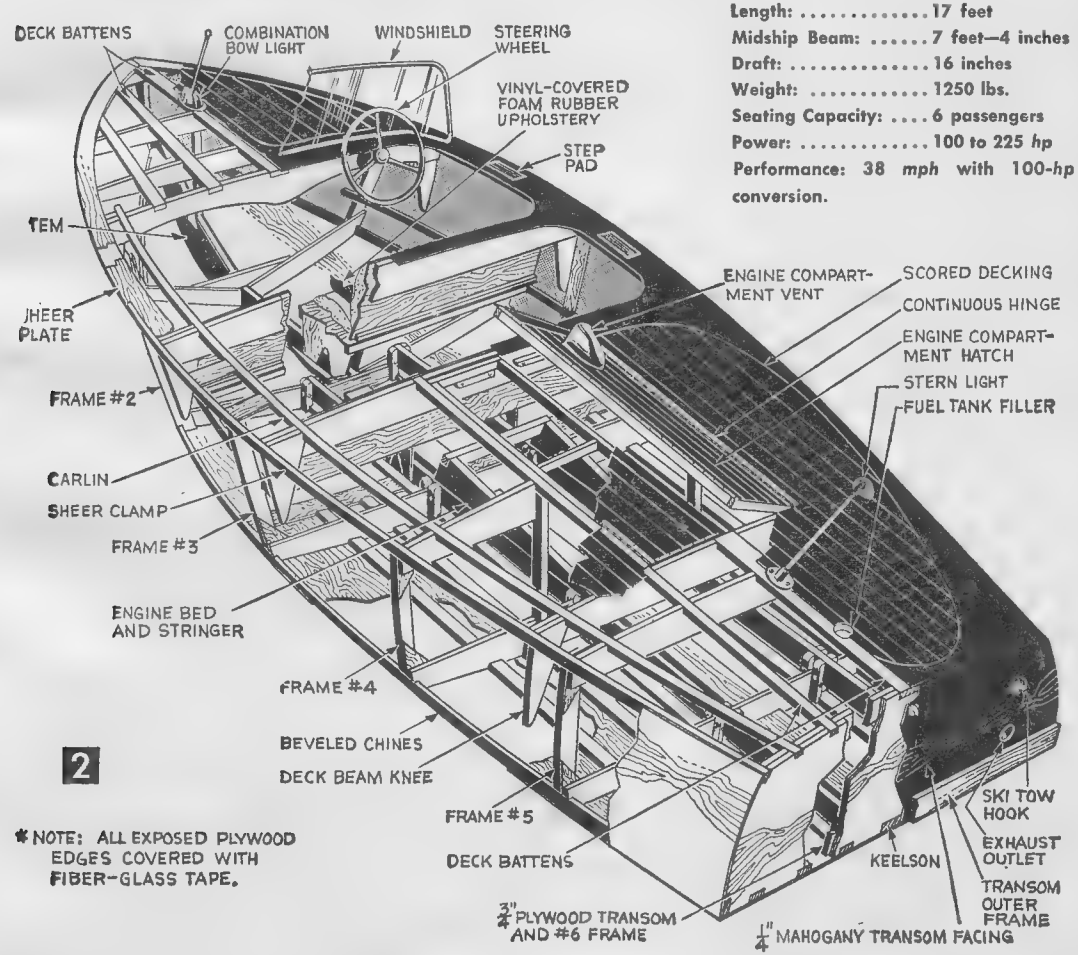
When all frames are assembled, mark the location of the keelson, stringer, and seat riser notches and, also, of the prop shaft and beam cutouts in frame #4. Do not cut these notches, however, until assembly.

The stem assembly is made up of 1⅝-in.-thick lumber joined with a spline and covered on both sides with ¼-in. plywood facings. Lay out the stem full-size on building paper by first drawing the base and vertical reference lines as in Fig. 6A. Then draw the stem and chine knee locating lines and the ordi-

Craft Print Project No. 327

SPECIFICATIONS

Length: ..... 17 feet
Midship Beam: ..... 7 feet—4 inches
Draft: ..... 16 inches
Weight: ..... 1250 lbs.
Seating Capacity: .... 6 passengers
Power: ..... 100 to 225 *hp*
Performance: 38 *mph* with 100-*hp* conversion.



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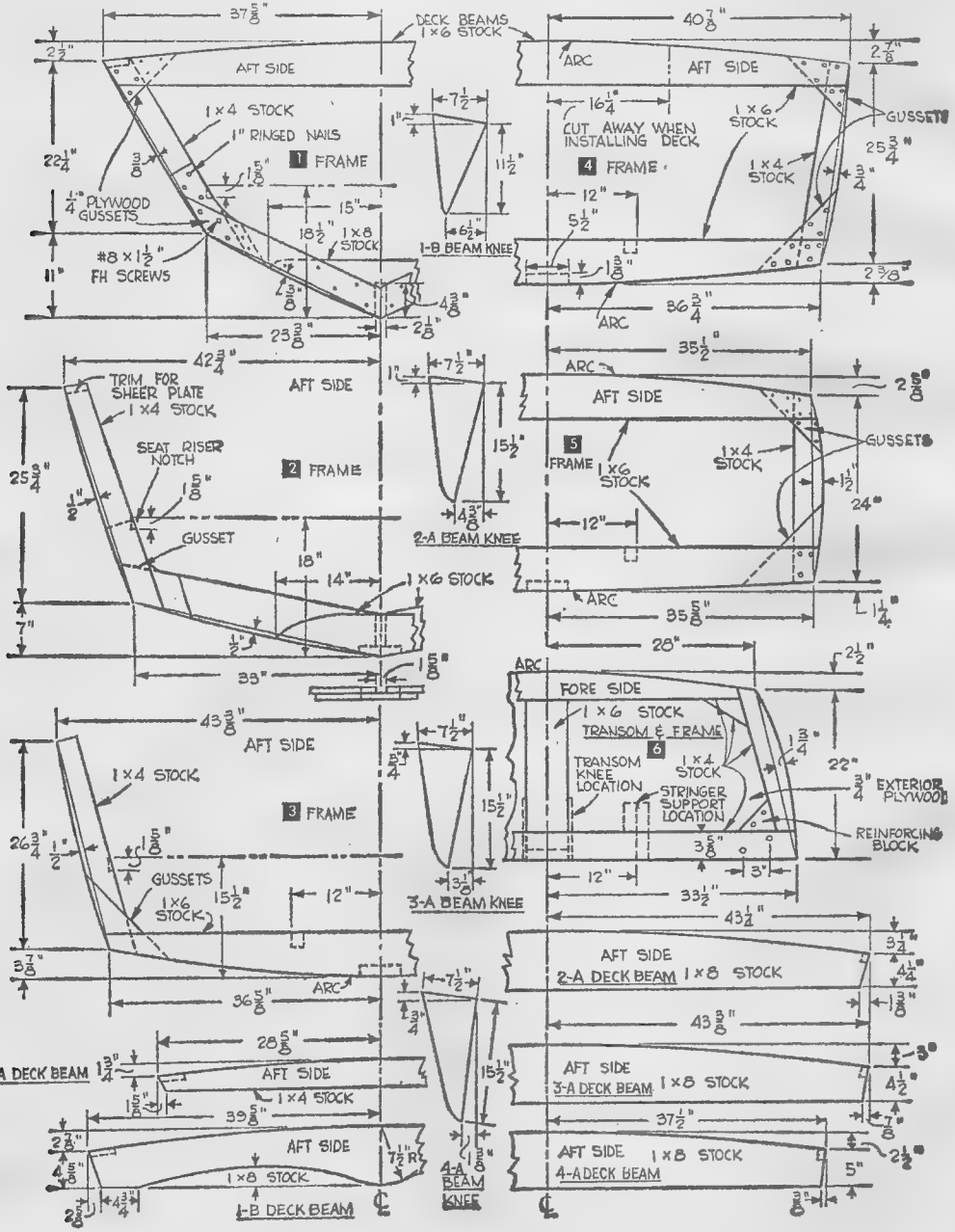
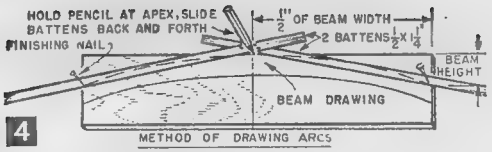
* NOTE: ALL EXPOSED PLYWOOD EDGES COVERED WITH FIBER-GLASS TAPE.

nales used to lay out the curve. Draw in the curve with the aid of a wooden batten and mark the location of the plywood facing with colored pencil. When finished, transfer the shape of the stem parts to the stock and cut them out. Make the splined joint as in Fig. 6B. Cut the grooves for the spline with a dado head on a circular saw or by making a series of side-by-side cuts with a regular saw blade. Coat the contacting surfaces of the stem parts and spline with glue and assemble them along with the lower stem knee on a flat surface using #12 x 2¼-in. *fh* screws. Many of these screws will be removed later to allow the stem parts to be faired.

Next, using the lumber core as a template, make the plywood facings and attach these with glue and 1-in. ringed nails. When the





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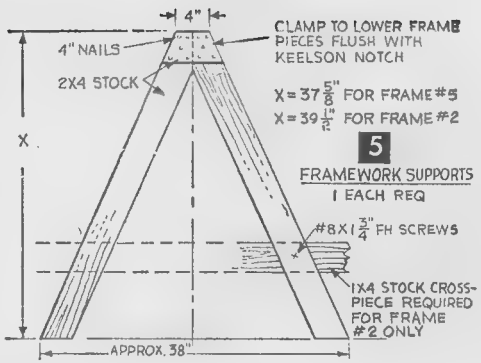
glue has dried, locate and cut the chine and keelson notches.

Cut the Upper Stem (Fig. 8B) from 2 x 6 stock, beveling and tapering it as in Fig. 6C. Fasten this to the stem assembly with glue and three #10 x 2¼-in. *fh* screws. Then cut and attach the upper stem knee (Fig. 6A), mounting it flush with the end of the stem.

Make the keelson (Figs. 8B and C) from a 12-ft. length of 2 x 6 stock that has been planed down to 1⅜ in. at the lumberyard. Taper the keelson from full width to 24 in. from the fore end to 2¼-in. where it fits the stem notch. Then, measuring from the fore end, lay out and number the positions for the frames according to Fig. 8. Coat the contacting surfaces of the stem and keelson with glue and assemble them, centerlines aligned, with three #12 x 2¼-in. *fh* screws.

Now with the keelson and stem assembly upside down, place #2 frame in position so the aft end of the stem butts against the plate and the frame is evenly divided over the locating line. Frames #1 and #2 are notched now to fit the stem and keelson assembly.

Be sure that frame #2 is at 90° to the top and edges of the keelson. When the frame fits well, remove it and coat the contacting surfaces with glue. Fasten the frame to the



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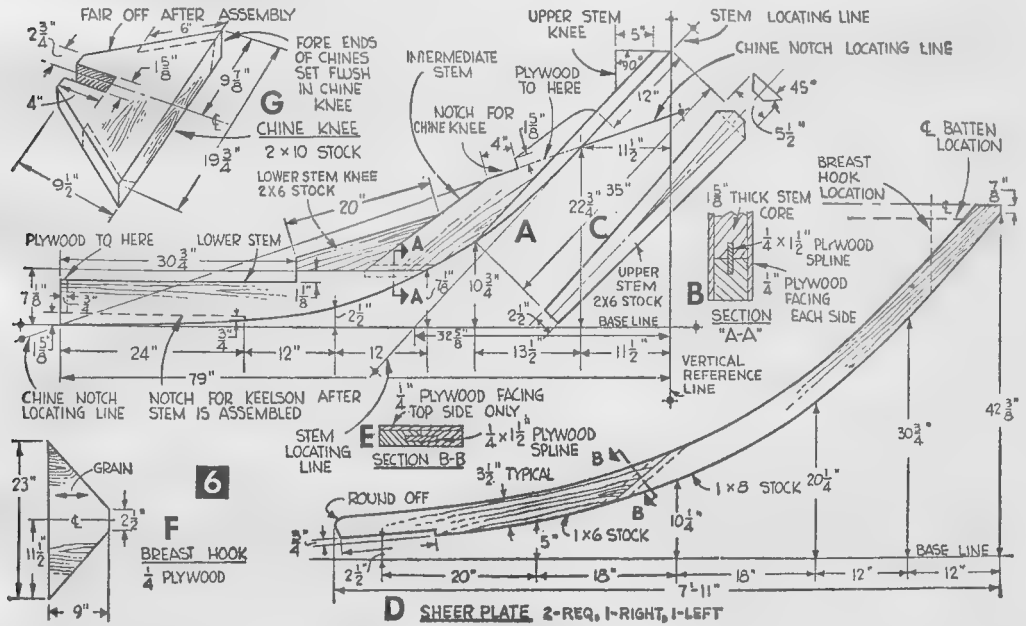
keelson with two #12 x 2¼-in. *fh* screws, countersinking the heads ⅛ in. Next install frame #1 in the same way, driving an additional screw through the plate into the stem and checking to be sure this frame is parallel to frame #2.

When the glue has dried, remove as many screws as necessary from the keelson and stem assembly so you can fair the stem curve as in Fig. 8B, using a wood rasp, jack plane, or power sander. When finished, redrive the screws, countersinking their heads ⅛ in.

Sheer Plates. Next lay out one sheer plate as in Fig. 6D directly on ¼-in. plywood and use this as a template to make the other sheer plate and a pair of ¾-in.-thick lumber cores. Then attach the facings to the cores with glue and 1-in. ringed nails. Cut the breast hook (Fig. 6F) from ¼-in. plywood



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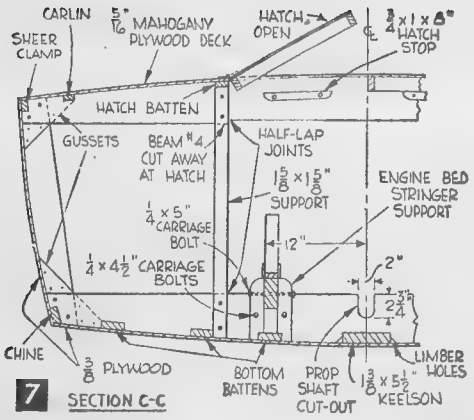
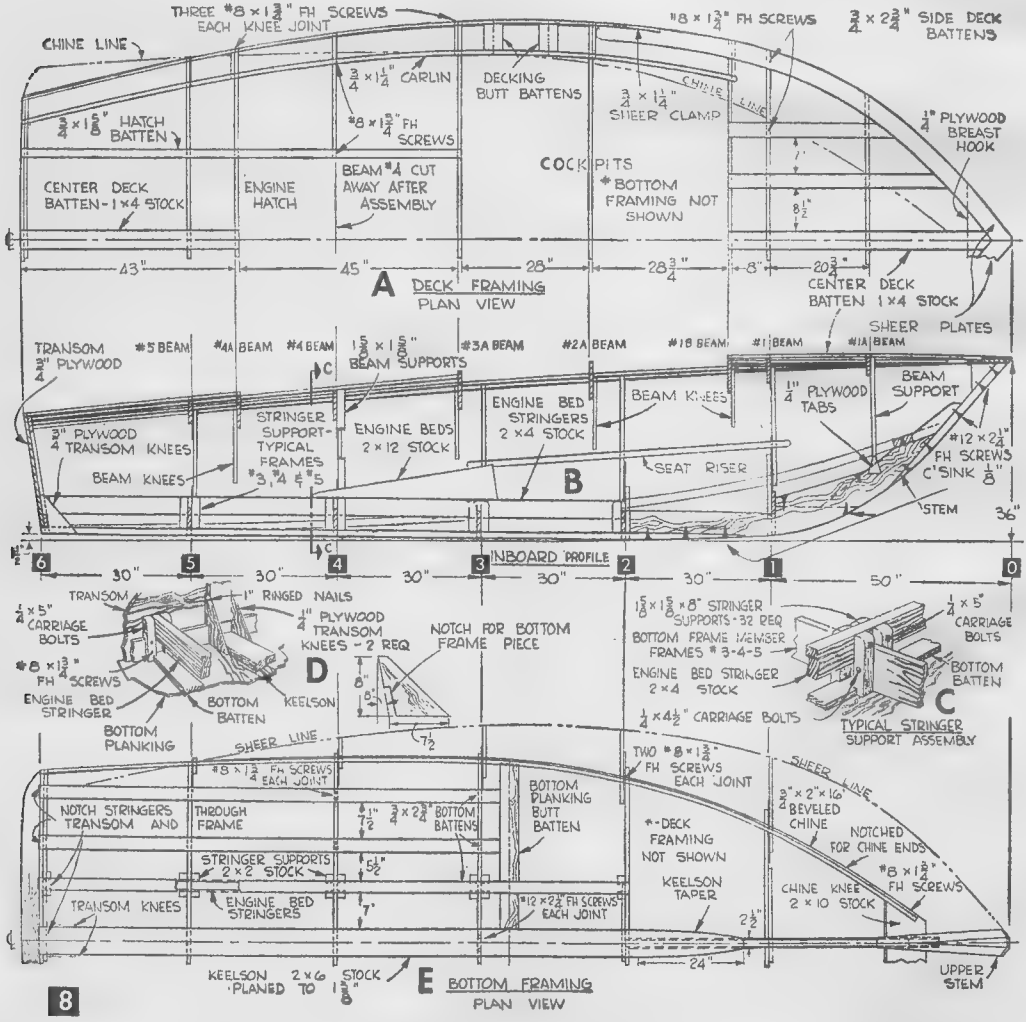


and fasten this to the upper stem with glue and #8 x 1¾-in. *fh* screws.

Place the sheer plates, with facings up, into the frame notches to check their fit and clamp them to the beam of #1 frame to see that everything fits well. It may be necessary to run a hand saw through the joint between the plates to provide a close fit. Now unclamp the plates and, working from the breasthook aft, coat the contacting surfaces with glue. Secure the plates to the stem and frames with #8 x 1½-in. *fh* screws.

Next cut the patterns for the intermediate deck beams (Fig. 3) and knees from paper and arrange them on 1 x 8 stock so they can be cut with the least waste. Transfer the shape of these parts to the stock, cut them, and fit the sheer plate notches.

Now measure back 8 in. from the fore side



of beam #1 (Fig. 8) and fasten beam #1B flush with the sheer plates, using two #8 x 2-in. screws to each joint. The beam knees are not installed at this time. Place #1A beam so its fore side is 20 in. forward of beam #1. Support this beam with a vertical strut that is fastened to the beam with glue and one #8 x 1¾-in. *fh* screw and whose lower end is notched into the stem (Fig. 8B) and secured with plywood tabs, glue, and nails.

Next notch the beams for the centerline deck batten (Fig. 8A) and, after fitting the fore end to the sheer plate joint and inserting

MATERIALS LIST—RIVIÈRA (Framing Only)

(Parentheses indicate nominal sizes used when ordering lumber)

Amt. Req.	Size and Description	Use
2	(1x4) x 16′ oak, fir, pine	chines, carlins, seat framing
10	(1x4) x 12′ oak, fir, pine	seat risers, #1 beam supports, sheer clamps, frames, beams, hatch framing
6	(1x6) x 12′ oak, fir, pine	frames, sheer plates, beams, deck battens
6	(1x8) x 8′ oak, fir, pine	frames, beams, beam knees, sheer plate
3	(2x4) x 12′ oak, fir, pine	engine stringers, frame supports
2	(2x6) x 12′ oak, fir, pine	keelson, stem, beam supports
1	(2x8) x 4′ oak, fir, pine	lower stem
1	(2x10) x 2′ oak, fir, pine	chine knee
1	(2x12) x 8′ oak, fir, pine	engine beds
1	¾ x 28 x 72″ fir EXT plywood	gussets, breast hook, facings, splines
1	¼″ x 4′ x 8′ fir EXT plywood	transom

FASTENING AND MISCELLANEOUS

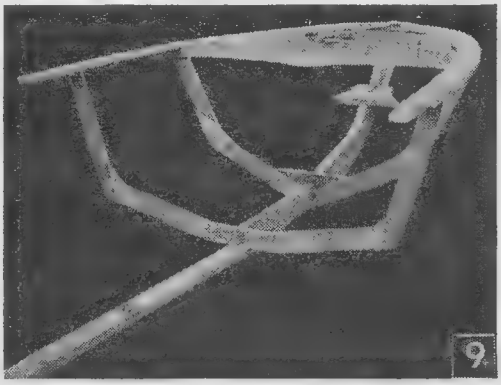
50 ft.	36″ red rosin building paper
5 lbs.	Weldwood glue powder
3 gr.	#7 x 1″ *fh* brass or monel woodscrews
5 gr.	#8 x 1¼″ *fh* brass or monel woodscrews
2 gr.	#8 x 1½″ *fh* brass or monel woodscrews
1 gr.	#8 x 1¾″ *fh* brass or monel woodscrews
3 doz.	#12 x 2″ *fh* brass or monel woodscrews
3 doz.	#12 x 2¼″ *fh* brass or monel woodscrews
1 lb.	1″ *Anchorfast* boat nails

a filler to bring the top side of the batten flush with the plates, attach it to the beam with glue and two #8 x 1¾-in. *fh* screws and to the breast hook with glue and three #8 x 1½-in. *fh* screws.

Make one each of the supports as in Fig. 5, and temporarily attach the longer one to frame #2 with a crossbrace and #8 x 1¾-in. screws. Attach the other support in the same way to frame #5, but omit the crossbrace.

Now cut and bevel the keelson notch in frame #5 so the frame will sit parallel to frame #2, and attach it with glue and two #12 x 2¼-in. *fh* screws. When the glue has dried, turn the subassembly upside down so it rests on the supports. Then attach the frames #3 and #4 in the same way, beveling the keelson notches as necessary so the frames will hang vertical and be parallel to the other frames.

Next attach the transom (Fig. 8B), obtaining the proper angle by attaching ¼-in. plywood transom knees to the center framepiece and keelson with glue and 1-in. ringed nails. Then drive two #12 screws through the keelson into the transom and trim the keelson



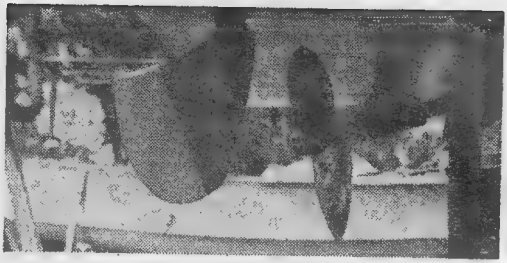
Subassembly, consisting of stem, forward frames, and sheer plates, gives first promise of Riviera's beamy eye-catching lines.

flush with the aft edge.

Rip the chines (Fig. 7) from 1 x 4 stock and cut their notches in the lower corner of each frame, using a short piece of chine stock as a gauge so the chine will fit flush. Then clamp the chines at the transom, bend them in, and clamp again at the chine knee. Run an 8-pt. saw between the chine and the notch to fit the frames to the curve of the chine. When the chines fit along their entire length, fasten them to the frames with glue and one #8 x 1¾-in. *fh* screw to each joint, and to the chine knees with two screws to each side. When finished and the glue has dried, install the sheer clamps (Fig. 7) in the same way. Use 1¾-in. stock, however, and begin fitting them in the notches of the sheer plate.

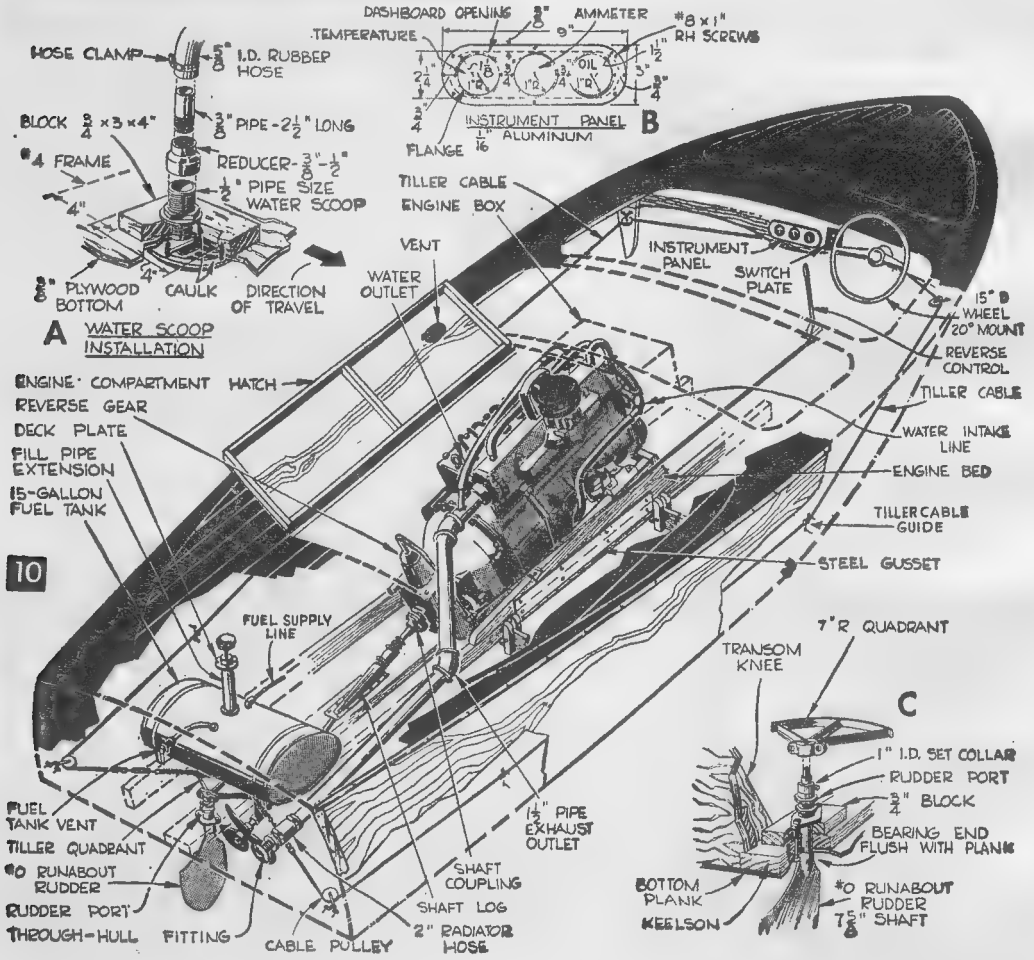
Next rip the bottom stringers (Fig. 8) from 1 x 6 stock and, after locating them as in Fig. 7, notch them flush into the frames and secure them with glue and two #8 x 1¾-in. *fh* screws to each joint.

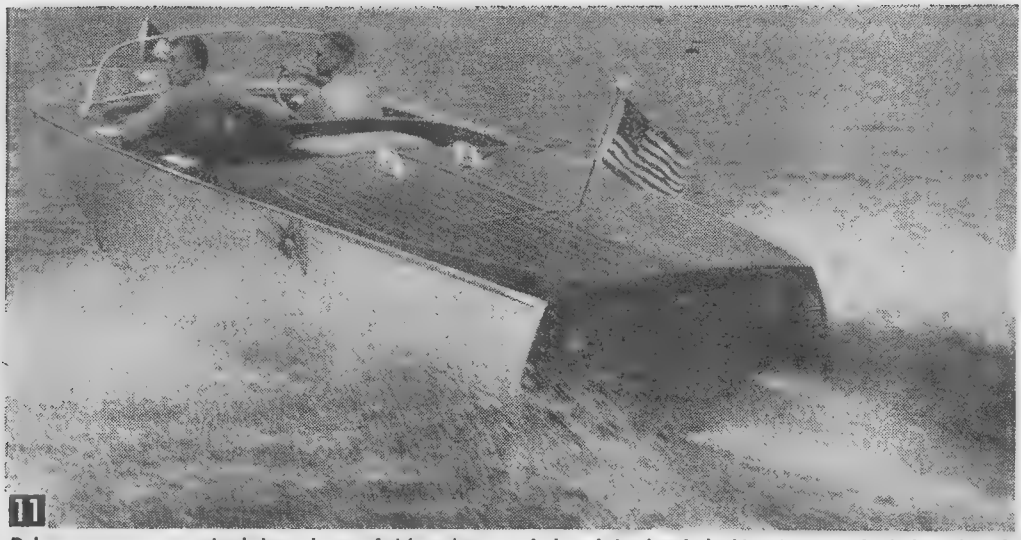
Framework Is Now Faired prior to planking, using several ¼ x 1¼-in. wooden battens ranging 4- to 16-ft. in length. Lay these along the framework and across the bilge stringers to locate areas that are ¼ in. or more above the rest of the framing. Trim these areas with a jack plane or a Stanley (Sear's) *Surform* rasp. If low spots are found, glue in filler pieces or "dutchmen" and trim these so the checking batten will make a smooth curve when laid anywhere along the frame.



Rudder and strut, shown under finished boat, have close clearances which work out quite well. Shape of rudder is best for ready maneuverability and skiing.

Closeup view showing engine beds cut from 2 x 12 stock in position on 2 x 4 stringers firmly held by several sets of stringer supports.





Deluxe appearance, gained through use of rich mahogany deck and simulated planking, increases both the value of your runabout and your enjoyment of it.

Having completed the frame, you are ready to attach the plywood planking. The original Riviera used a three-ply, plastic-overlayed plywood (See Materials List, p. 78) for the sides and bottom which will take a glass-like finish and resist checking when painted with marine paints. Also, for smart appearance and increased value, five-ply African mahogany, scored and filled to simulate individual planks, was used for the deck. For economy, however, fir exterior plywood of the same thicknesses may be substituted without lessening quality.

First cover the transom with a ¼-in. mahogany plywood facing and a 3-in.-wide outer frame. Rabbet the frame (Fig. 13D) to hold the lower edge of the facing and fasten it to the transom with glue and #8 x 1¾-in. *fh* screws spaced 3 in. apart. Now set the plywood in the rabbet and trace the outline of the transom on it. Saw this to shape and, after coating the mating surfaces with glue, clamp the facing in place. For economy, this facing can be omitted and the transom covered with fiber glass.

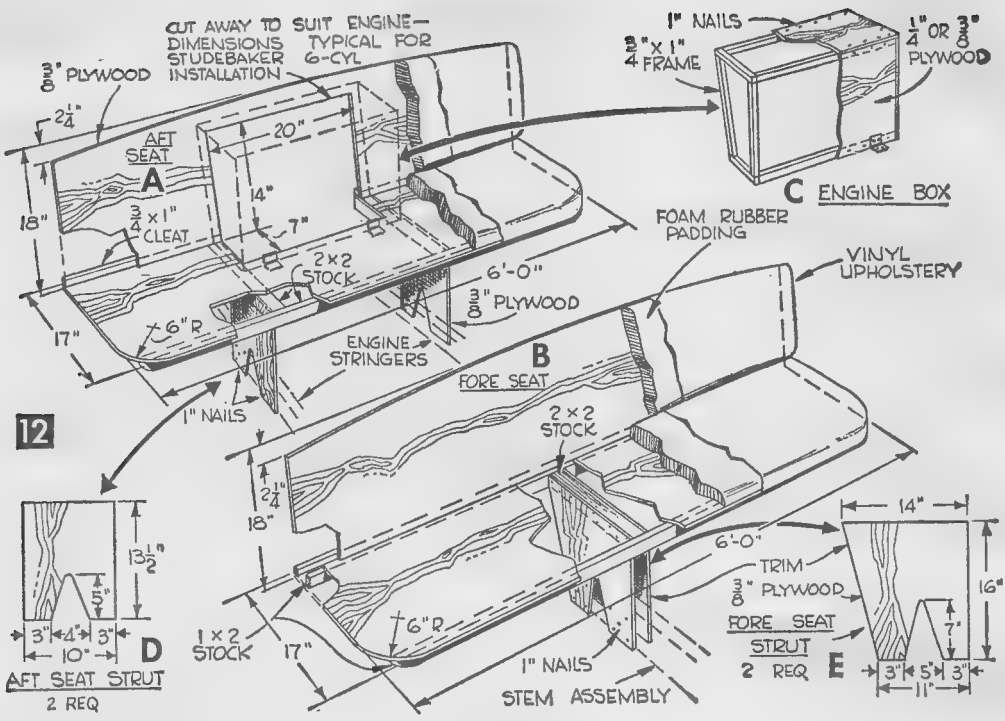
Start Planking the Hull by clamping entire 4 x 8-ft. plywood panels to the aft bottom of the framework so the 8-ft. edges meet along the centerline of the keelson (Fig. 13A) and the aft edges are flush with the transom. Make a pencil line along the sheer, chine, and transom, then trace in the outlines of the keelson and bottom battens. Remove the panel and drill #4 lead holes at 12-in. intervals in these outlines. Connect these holes with a pencil line on the outside of the panel so you can locate and drive the planking screws.

Now saw the marked planks to shape and apply glue to the contacting surfaces of the planking and framework, except for the transom and chines—where a 1/16-in.-thick layer of *Stay-Tite* butyl caulking is used. Clamp the planking in place again and fasten it with #8 x 1¼-in. *fh* screws spaced 2½ in. apart, driving a double row along the transom, and countersinking all screw heads 1/16-in. below the surface. Attach butt battens (Fig. 13F) to the fore edge of the installed planks so their centerlines coincide with the plywood edges.

Use a cardboard pattern to determine the shape of the fore-bottom planks. Line up the edges of the cardboard with the keelson centerline and butt batten, and mark it along the stem and chines. After cutting this to shape, transfer the outline to plywood, allowing ½ in. along the chine and stem lines for fitting. Cover the fore end of the planks with wet burlap and run a hot electric iron over this to steam the plywood and make it pliable. Prepare both fore-bottom planks so they can be clamped in place at the same time and attached as were the bottom planks.

Side Planks. Before installing the side planks, the bottom planking must be trimmed (Fig. 13B) so it will butt against the edges of the side planks 54 in. along the seams. First mark the centerline on each chine, then cut through the plywood and trim it away. Aft of this area the side planks lap the bottom planks (Fig. 13C).

After shaping and installing the side planks (Fig. 13A) in the same way as you did the bottom planks, trim the seams along the bow to take the outer stem (Fig. 13G). Attach the ½ x 1¼-in. stock with glue and #8 x 1¾-in. *fh* screws. When the glue is dry, remove the screws and fair off the fore end of the stock so a tapered piece of 1 x 4 stock will fit tight-



MATERIALS LIST—RIVIERA

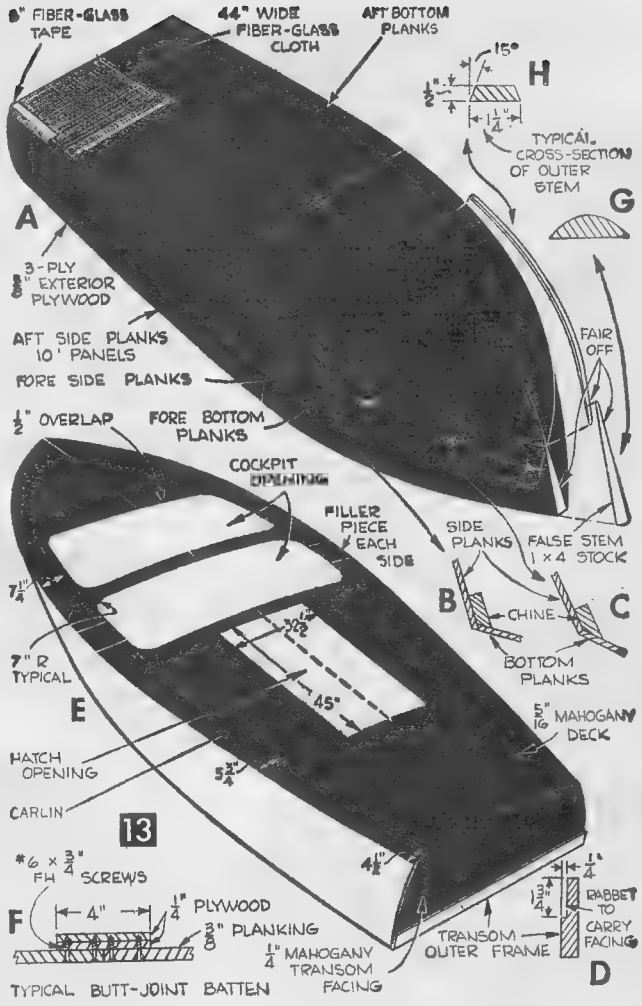
No. Req.	Size and Description	Use
6	3/8"x4'x8' plastic-overlaid 3-ply plywood	side and bottom planks
2	3/8"x4'x10' plastic-overlaid 3-ply plywood	aft side planks
4	5/16"x4'x8' African *Mufumbi* 5-ply mahogany plywood	deck
1	1/4x24x72" African *Mufumbi* mahogany plywood	transom facing
(Above materials available from Harbor Sales, Baltimore, 30, Md.)		
1	1/8"x4x8' tempered hardboard	routing templates
2	2x18x72" foam rubber billets	seat cushions
4 yds.	36" vinyl plastic	upholstery
2	1/16x2x18" brass strip	tumbie-home trim
2	1/16x1" steel strap	fuel tank strap
2	1/16x3x30" flat steel	engine bed gussets
1	1/16x3x9" aluminum sheet	instrument panel
1	1 1/2"x72" black iron pipe	exhaust pipe
2	1 1/2"x45° black iron pipe elbows	exhaust pipe
1	2" I.D.x5" radiator hose and clamps	exhaust pipe connection
8 ft.	5/8" I.D. heater hose with clamps	water connection
1	15-gal. auto fuel tank	fuel tank
2 qt.	Firzite plywood sealer	
2 gal.	spar varnish	
1 qt.	Stay-Tite butyl caulking	
Misc.	Spackle powder, flat white paint, turpentine, wood putty, hook-up wire, 3/8" pipe fittings, rubber and copper tubing, lag screws, bolts	
1	12x65" windshield with mounting	
1	*Elgin* steering wheel and cable kit	
1	*Elgin* 3" fiber glass tape kit	
12 yds.	44" fiber-glass cloth	
2 gal.	resin	
(Above materials available from Sears Roebuck and Co.)		

No. Req.	Size and Description	Use
1	*Dyna-Jet* 11x12, *Michalloy-K*, 3-blade, cupped propeller	
1	15° self-aligning shaft log with mounting bolts	
1	1" bore, 6" drop, strut with mounting bolts	
1	1" dia.x45" propeller shaft with nut, machined to suit prop	
1	#0 runabout rudder with 1x7 5/8" post	
1	rudder port with mounting screws	
1	7" radius rudder quadrant	
1	1" I.D. set collar with setscrew	
1	3/8" fuel tank vent	
1	1 1/2" through-hull exhaust fitting	
1	1/2" water intake fitting	
1	reverse gear control	
1	throttle control	
1	choke control	
1	battery holder with cables	
1	switch panel	
1	30-amp. ammeter	
1	80-*psi* oil pressure gauge	
1	100-212°F water temperature gauge	
2	3" cable tighteners	
4	cable guides	
2	1/4x3" turnbuckles	
1	combination bow light	
1	stern light	
2	clam shell ventilators	
4	step plates	
1	1 1/2" deck filler cap	
2	48" piano-type hatch hinges	
1	deck fittings set	
3	1"x12" half-oval aluminum sheer molding	
2	1/16x1 1/2x60" brass hatch trim	
1 qt.	Pettit's light mahogany semi-paste wood filler	
3 qt.	Pettit's *Polypoxy* exterior paint	
(Above materials available from Stoke's Marine Supply Co., Coldwater, Mich.)		

ly against the upper stem. Attach this in the same way, again removing the screws to fair and shape the assembly (Fig. 13H). When finished, redrive the screws at the stem and go on to round the edges of the planking so fiber-glass cloth can be applied without damage.

Fiber-glass Protection. Cover the bottom of the hull on each side of the centerline with a piece of 44-in.-wide fiber-glass cloth, trimming it along the chines (Fig. 13A). Roll the cloth on a mailing tube for easy handling; then, starting at the transom and working forward, apply resin according to the manufacturer's instructions, laying on the cloth 18 in. at a time. When the bottom is covered and the first coat of resin applied, cover the chine edges from the transom to the stem with 3-in.-wide fiber-glass tape. For the most durable finish, apply four coats of resin, allowing each to cure before applying the next.

Now get the gang together and make any promises you must to get some help in turning the hull. You've got a pretty good-size boat on your hands now and it will take plenty of muscle and careful maneuvering to turn it over without putting undue strain on the hull or the helpers.

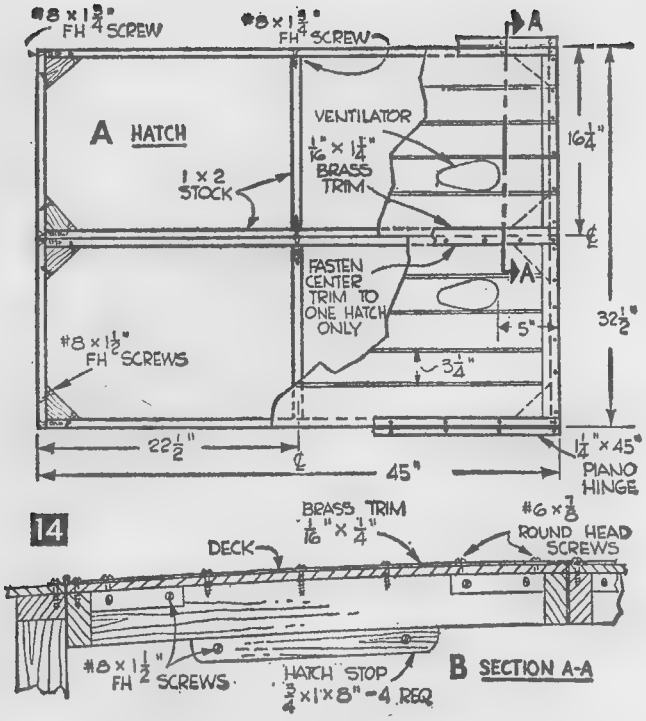


When the Hull is Turned and supported in a well-padded cradle so you can work on it without danger of tipping, you are ready to install the deck beam knees as in Figs. 2 and 3. After notching them to fit the sheer plate or clamps, position the knees and trace around them to locate lead holes in the side planks. Then attach the knees to the planks with glue and #8 x 1½-in. *fh* screws and to the beams with three #8 x 1½-in. *fh* screws at each end.

Next rip and shape the stock as necessary for the deck and hatch battens as in Fig. 8. Clamp these in place on the deck beams as in Fig. 2, locating the outboard edge of the carlins 4 in. from the sheer clamps and sighting along them to be sure they form a fair curve. Mark the location of these parts on the beams and cut notches for them. The notches of the transom are cut through the ¾-in. framing and plywood only, not through the mahogany facing. Attach the deck framing with glue and #8 x 1¾-in. *fh* screws.

Install the 12-ft. engine stringers (Fig. 8), notching the frame members 1⅝-in. deep (Fig. 7) and locating the outboard edges of the stringer notches 12 in. on each side of the hull centerline. Cut and fit these notches carefully, because the stringers must absorb all of the engine stress and transmit it as evenly as possible to the frames. Cutting the hatch opening (Fig. 8A) in #4 beam now will make it possible to get the stringers into the framework.

Cut the Engine Beds from one piece of 2 x 12 stock and attach them to the stringers with glue and ⅜ x 4-in. lag screws, countersinking these as necessary. After installing the crosspieces with half-lapped joints at each end, make up 1/16-in. steel gussets (Fig. 15D) and fasten these to both sides of each bed



template as a guide to route the outlines into the panels. When the outlines are finished, use a 3¼-in.-wide strip of hardboard as a guide to cut the simulated plank seams (Fig. 17C).

When all four panels are scored, lay out and cut the hatch and cockpit openings (Fig. 15A). Attach the decking with glue and #17 x 1-in. *fh* screws, countersinking the heads 1/32 in. Use the remaining pieces of mahogany plywood to fill in the space amidships (Fig. 13E) and to face #1B beam, which will be your dashboard. Use a cardboard pattern here to make a good fit and attach the facing with glue and countersunk #7 x 1-in. *fh* screws spaced 6 in. apart.

Now cut and install the 1⅝-in.-sq. supports (Fig. 7) for the inboard ends of #4 beam and use the cut-away portion of this beam to make six hatch beams (Fig. 14B). Rip the rest of the hatch framing from 1 x 4 stock and assemble it (Fig. 14A) with glue and 1¾-in. *fh* screws. Attach the cut-away portion of the aft deck panels to the framing with #7 x 1-in. *fh* screws, placing the screws between the scoring. Attach hatch stops to beams #3A and #4A, making sure the hatch is flush with the deck when resting on these stops. Install the hatch hinges next, driving only six screws in each hinge to hold them while you check the fit by opening and closing the hatch, adjusting the hinges and trimming the inboard edges of the hatch as necessary. When the hinges work smoothly, drive the rest of the screws.

Sand the deck with 3/0 sandpaper, holding a bright light just above the surface so you can see unwanted ripples clearly. When the surface is as smooth as you can sand it, use a vacuum cleaner to draw the sawdust from the scoring.

Now dilute semi-paste mahogany wood filler with thinner until it becomes the consistency of paint. Apply this to the deck with a brush, covering small areas at a time and, after waiting about 20 minutes, wipe it off across the grain with burlap. When the entire deck has been filled, allow a 4-hour drying period, then rub the deck with burlap again, this time rubbing with the grain in long, smooth strokes.

Let the deck dry for 10 hours, then apply two coats of *Firzite* sealer, waiting until the

with #8 x 1½-in. *rh* screws.

Rip the 1⅝-in. stock for the stringer support assemblies (Fig. 8C) and install one of these at each frame, excepting #2 and #6 where only half of each assembly is used.

Now is the best time to paint the interior of the hull. Clean away all sawdust with a vacuum cleaner and then apply three coats of spar varnish or weatherproof enamel. Also, using a light wooden batten as you did when fairing the framework for planking, prepare the deck framing to be covered with plywood.

Attaching the Deck. Clamp two panels of the 5/16-in. plywood in place at the bow (Fig. 13E) to mark and cut them as you did the planking. Two more 4 x 8-ft. panels are shaped in the same way after aligning the edges with the aft edge of the transom. This leaves a section amidships that is not covered with plywood but which will be filled in later with the material cut away to form the cockpit openings.

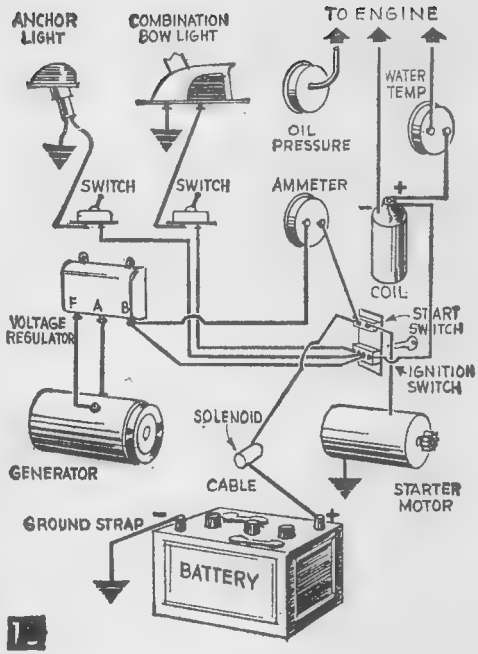
Lay out the routing templates in Fig. 17A on 1/8-in. oil-tempered hardboard. After cutting these and placing the shaped deck panels on saw horses to provide a comfortable working position, locate the templates as in Fig. 15A and hold them temporarily in place with tacks. Now set the bitt of a portable router to cut 1/16 in. into the decking and, after making a few trial runs in scrap plywood, use the

first coat is dry to the touch before adding the second. The filled and sealed deck is now allowed to age while you complete the rest of the boat.

Install the seat risers by ripping a 66-in. piece of 1 x 4 stock in half lengthwise and notch these pieces partway into the frames at the locations in Fig. 3. Attach these with glue and one #8 x 1¾-in. *fh* screw to each joint.

Installing the Seats. Cut the seat bottoms and backs according to the dimensions in Fig. 12 and attach the 1 x 2 and 2 x 2 stock for framing. Then cut a pair of seat struts for each seat, checking the fit of the parts by temporary assembly, then attach the struts to the keelson and the seat bottoms to the risers and struts with #8 x 1¾-in. screws.

If the seats are to be upholstered as in Fig. 12, this should be done before permanently installing the seat backs.. Also, unless you are using the Studebaker six-cylinder engine, it is best to wait with the installation of the rear seat until the engine is in place and you can determine how large the cutouts (Fig. 13A) must be. Attach the seat backs to cleats on the aft edges of the seat bottoms and, after trimming the upper edge of the seat backs



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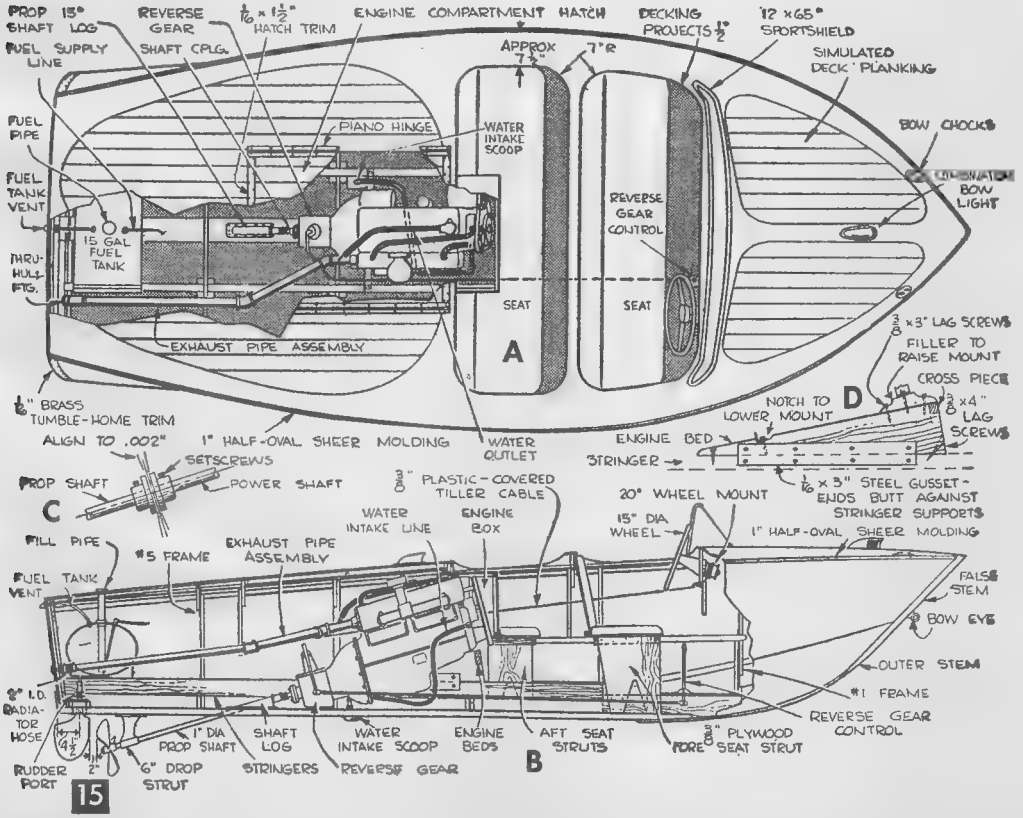
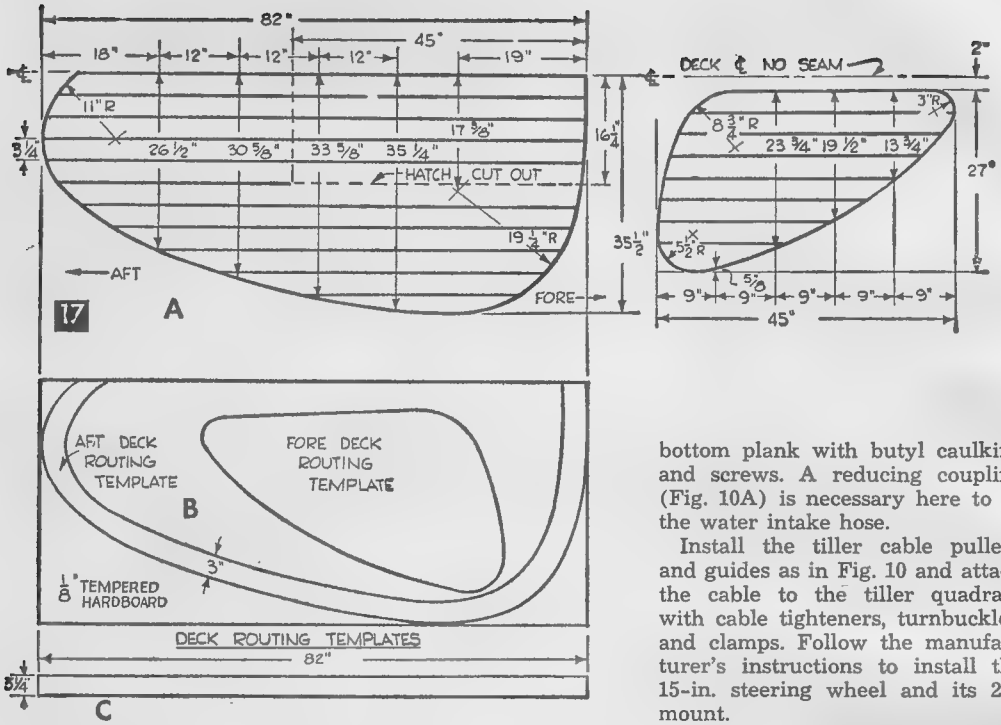




to conform to the crown of the deck beams, to these also.

A cardboard pattern for the floorboards can be made now and the panels cut to shape. Wait until the operating controls are in place, however, before attaching these to the stringers and floor plates with #8x1¾-in. oval-head screws and finishing washers.

Prop Shaft and Rudder. You now are ready to install the accessories and fittings that must go into the hull before the engine. First locate and mark a point for the propeller shaft alley 10½ in. forward of #5 frame on the centerline of the keelson. This is the point where the pilot of the 1⅛-in. auger bit is to enter. Make up the boring jib (Fig. 18A) and attach it to the keelson with two #12x2¼-in. screws. Then bore the shaft alley as in Fig. 18B.

The rudder used (Fig. 15B) has a 1-in. shaft and enters the hull through a matching rudder port. To install the port, drill a 1½-in. hole through the hull on the centerline, 4½ in. from the aft edge of the transom. Daub the contacting surfaces with Stay-Tite and install the port (Fig. 10C) from the inside of the hull, securing it with ⅜x1½-in. carriage bolts, flat washers, and nuts. The rudder is held in the port with a 1-in. I.D. set collar.

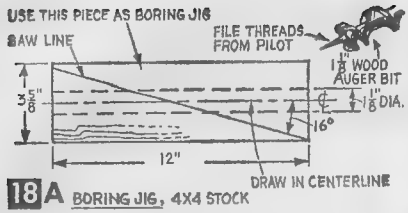
The cooling water intake is positioned as in Fig. 15A and is mounted on a block of ¾-in.-thick lumber before being attached to the bottom plank with butyl caulking and screws. A reducing coupling (Fig. 10A) is necessary here to fit the water intake hose.

Install the tiller cable pulleys and guides as in Fig. 10 and attach the cable to the tiller quadrant with cable tighteners, turnbuckles, and clamps. Follow the manufacturer's instructions to install the 15-in. steering wheel and its 20° mount.

The Fuel Tank may be purchased ready-made or you can convert a salvaged auto gas tank of around 15-gal. capacity. Clean the tank with sal soda and drain dry. Make two mounting blocks (Fig. 15B) to fit under the tank from 2 x 4 stock and fasten these to the engine stringers with #10 x 2-in. screws. Be sure the tank is mounted far enough forward to clear the tiller quadrant. Secure the tank to the blocks with 1/16 x 1¼-in. steel straps bent over the tank and fastened to the stringers with #10 x 2-in. *rh* screws. Strips of inner tube between the straps and the tank will prevent abrasion.

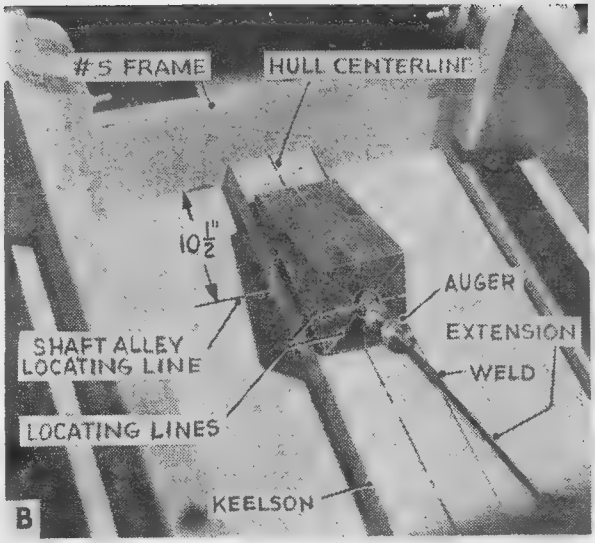
Install a fill pipe (Fig. 15B) between the tank and the deck filler plate with radiator hose and hose clamps. The fill pipe extends almost to the bottom of the tank, preventing excess fumes from rising. Clean the supply line connection and use ⅜-in. copper tubing to reach from the tank to the carburetor. Drill the tank for a ⅛-in. pipe fitting and lead ¼-in. rubber tubing to a vent at the transom. *All connections on the fuel tank should be made with epoxy resins requiring no heat or flame to use.*

Use ordinary black-iron well pipe to carry the exhaust through the transom (Figs. 10 and 15). Avoid right-angle bends here as they cause back pressure, robbing your engine of power. The exhaust line will require two 1½-in., 45° pipe elbows, plus a 12- and a 48-inch length of 1½-in. pipe. Coat the connec-



18A BORING JIG, 4X4 STOCK

After drilling and cutting from 4 x 4 stock, mark the centerline of the guide hole on the outside of the jig. Then align this with a pencil line drawn through the shaft alley location and fasten the jig to the keelson with two #12 x 2¼-in. screws. File the threads from the pilot screw of a 1⅛-in. wood auger, to which a 15-in. length of ⅜-in. steel rod has been welded, allowing it to be used in a medium-speed ½-in. electric drill. When finished boring, remove the jig and smooth the hole with a coarse file. Then coat the alley and the surrounding area with the same resin used to apply fiber glass.



tions with Stay-Tite when installing the through-hull fitting, then secure it with the lock nut. Make the connections on the inside of the hull with hose clamps and temporarily support the fore end of the 4-ft. pipe until the engine is installed.

Now coat the contacting surfaces of the shaft log (Fig. 15A) and the keelson with Stay-Tite and assemble these with #12 x 2¼-in. *rh* screws. Insert the propeller shaft in the log and place the strut (Fig. 15B) over the shaft on the underside of the hull. Position the strut so the shaft turns freely, then mark the location of the bolt holes on the keelson. Attach the strut with four 5/16 x 2½-in. machine bolts, flat washers, and nuts.

Installing the Engine. The safest method and often the least expensive is to hire a tow truck to hoist the engine aboard, because two or three fittings may be required before the engine is ready to be bolted down.

When the engine on the beds and the coupling halves (Fig. 15C) in place on the transmission and propellor shafts, check engine alignment by bringing the coupling tightly together over three pieces of paper spaced at equal distances around it. If any of these papers can be removed without tearing, the engine must be shifted slightly in that direction. To raise an engine mount, fit a wooden wedge or shim between the mount and the engine bed; to lower, cut away the bed beneath the mount (Fig. 15D). When the correct alignment is obtained, secure the engine with ⅜ x 4-in. lag screws.

Now install the propeller, checking to see that there is at least 2 in. between the propeller and the rudder (Fig. 15). Further repositioning of the engine may be necessary to obtain this clearance.

Now make up the shift control (Fig. 15) from ¼-in. steel rod to reach from the gear box lever to the control lever mounted between the fore seats. Attach this at each end with clevis pins. The throttle control is a flexible cable running along the hull to the lever mounted at the starboard side of the cockpit.

After connecting the 4-ft. exhaust pipe to the manifold, Riviera is ready to run, needing only two coats of paint, the fittings, and a white filling for the scored deck seams.

To make this, mix spackling compound and flat white paint, adding thinner until you get a putty-like consistency. Use a spatula to force this mixture into the routed seams, allowing as little as possible to get on the finished plywood. Remove excess filler carefully with a cloth dampened in thinner. When finished, apply two more coats of Firzite and two coats of spar varnish. Sand all but the last coat with 3/0 waterproof sandpaper and water.

Finally attach the fittings and lights as in Figs. 2 and 15, bedding each part in butyl caulking compound.

Make Your Test Run, carefully checking the operating temperature and oil pressure before attempting higher speeds. Also note and correct any vibrations that would indicate misalignment of the engine or strut and detract from your enjoyment of Riviera's performance. ■

● To obtain enlarged plan for building Riviera, Craft Print No. 327, see handy order form on last page of this issue.

JAMAICAN

A sailboard for maximum fun—it has a unique hull for a minimum of work

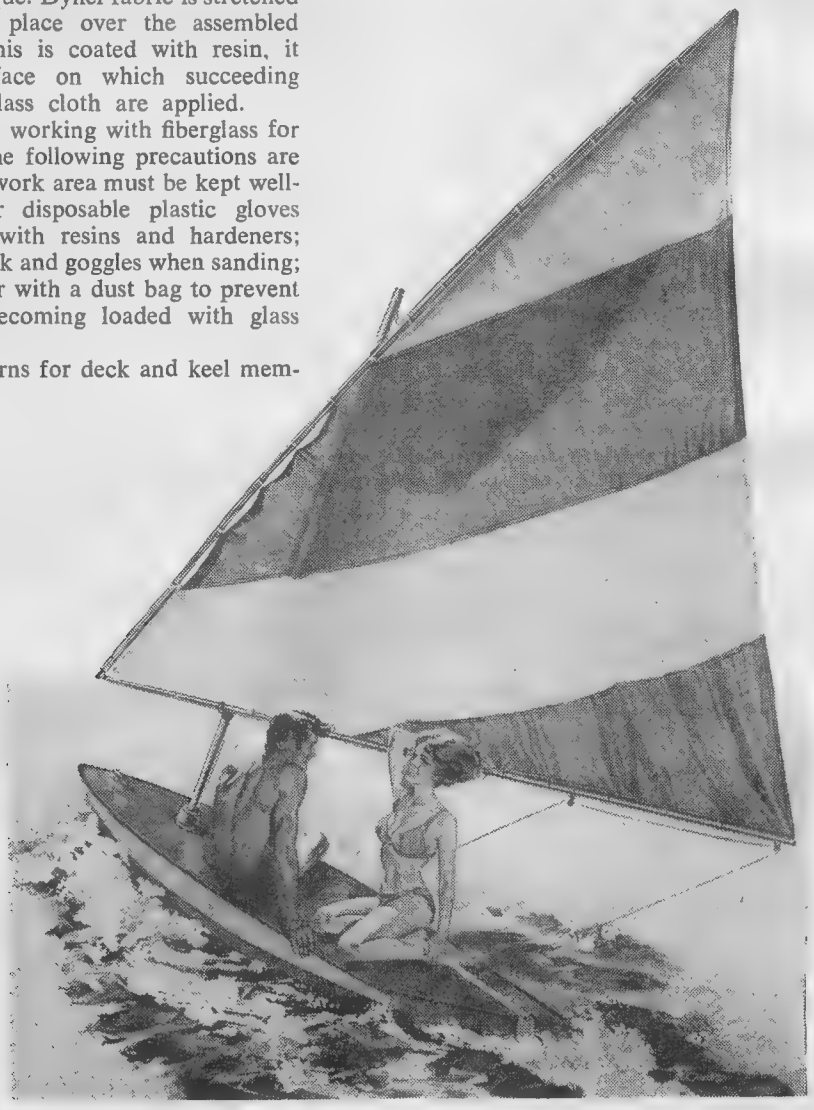
Craft Print 371

"Jamaican" is the apt name for this sailboard that was designed and built as a shop project at the Jamaica, N.Y. high school. Its hull is fiberglass and Dynel over a simple wood frame, and no special building jigs or forms are needed.

Construction technique developed for the Jamaican is unique. Dynel fabric is stretched and stapled in place over the assembled frame. When this is coated with resin, it forms the surface on which succeeding layers of fiberglass cloth are applied.

If you will be working with fiberglass for the first time, the following precautions are in order: Your work area must be kept well-ventilated; wear disposable plastic gloves when working with resins and hardeners; wear a dusk mask and goggles when sanding; and use a sander with a dust bag to prevent the air from becoming loaded with glass fiber dust.

Lay out patterns for deck and keel mem-



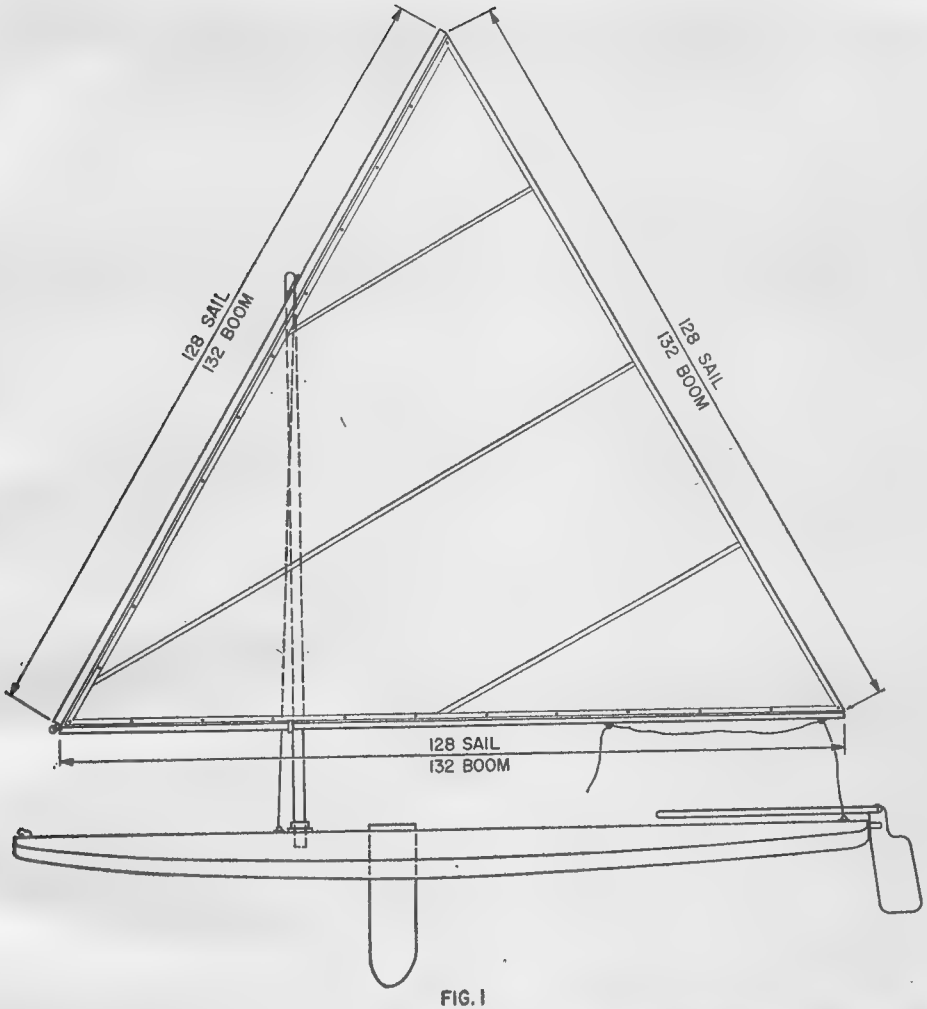
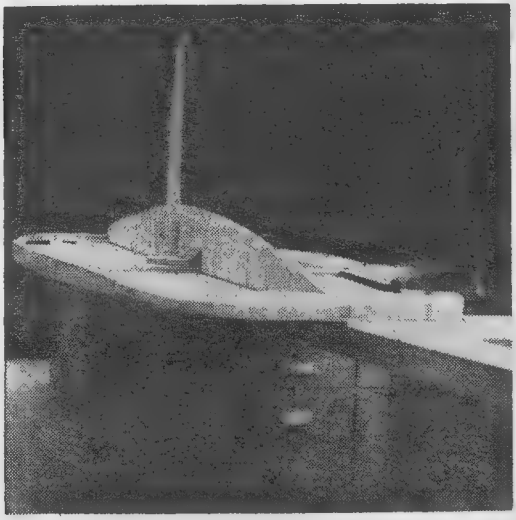


FIG. 1



Bottom view of the deck and internal structure. Note the centerboard temporarily in place, and the round ¾" disc which serves as a doubler for reinforcing the mast socket.

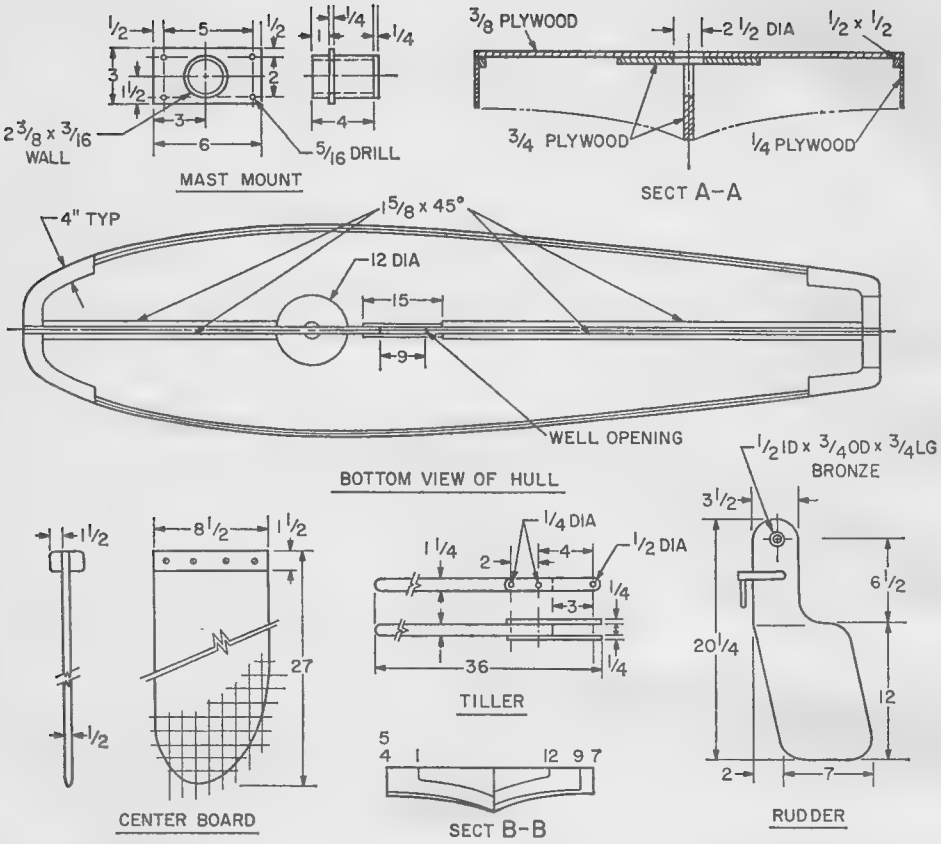
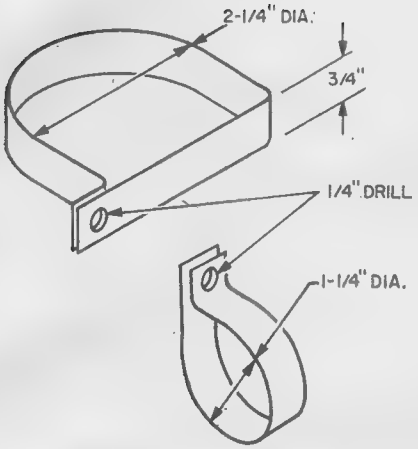


FIG. 2

STA	0	1	2	3	4	5	6	7	8	9	10	11	12
A	12	26	30	32	36	36	35	34	32	29	26	22	18
B	1¼	3	4	4½	4¾	5	4¾	4½	4¼	3¾	3	2½	1½
C	3	5	6¼	7	7½	7¾	8	7½	7¼	6¾	6	5	4½



(EE) GOOSENECK FITTING

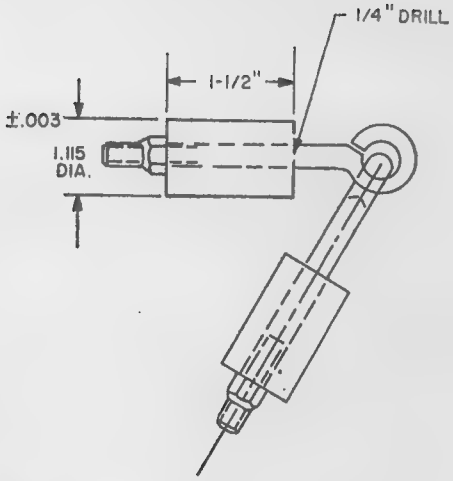


FIG. 3

Left: Dynel is draped over the completed frame then stretched tightly. This is easiest when two people work together using staple guns.

Below left: Layers of fiberglass are laid over the Dynel. The weave of each layer is angled at 45° to the one underneath.

bers full size on builders' paper, available at most hardware stores, then transfer the lines to the wood stock. The deck can be made up of a single piece of ⅜″ x 4′ x 12′ exterior grade plywood, or 1½ sheets of 4′ x 8′ plywood with a 6″ doubler extending the length of the joint. A 12″ diameter disc of ¾″ plywood serves as a doubler for reinforcing the mast socket. The bow and stern are shaped from soft pine. To support the sides, two ½″ square strips are secured to the edge of the deck; the sides are of ¼″ plywood, screwed to these strips. Since the hull is covered with fiberglass, screws of any metal can be used.

The keel is made from ¾″ plywood, with two side plates used to form the centerboard well. Four pieces of wood, each 1⅝″ x 45° are glued and screwed to the base of the keel, as shown in the bottom view of the hull. The keel is then glued and screwed to the deck.

The mast socket can be made of mild steel tubing and plate, or you can use one of 2″ inner diameter available from one of the marine supply houses. After the socket is bolted in place, fiberglass it to the keel to insure greater rigidity.

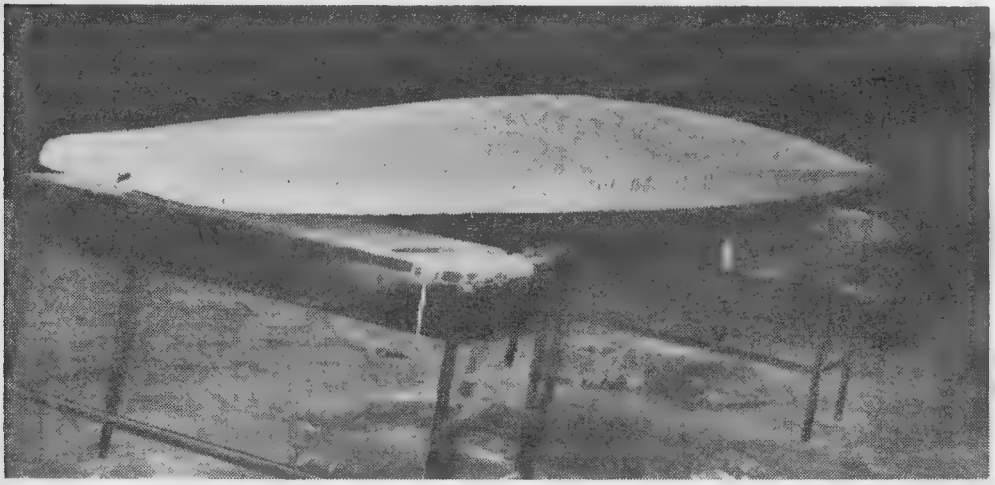
Now drape a sheet of Dynel 12′6″ x 48″ over the bottom of the boat, and stretch it tightly. This is an easy job when two people using staple guns work together. Care must be taken to prevent wrinkles. Polyester resin is now applied to the taut Dynel; use pigmented resin unless you plan to paint the finished hull. Additional layers of glass cloth are laid up, one at a time, over the Dynel. Apply the cloth so the weave angle of one layer is at a 45° angle to the layer below. Be sure the cloth wets out thoroughly; avoid resin-starved or resin-rich areas that weaken the structure. As the resin starts to cure, trim away excess cloth.

When the resin has cured, turn the hull right side up. Bore several 1″ diameter holes through the deck, and pour in polyurethane foam. When this cures, it provides added strength to the hull, as well as plenty of flotation. Plug the holes and add a layer of glass cloth to the deck. Cut the cloth away from the centerboard well opening on both the deck and the bottom, and fiberglass the inside of the well, bonding it to the hull and deck as a watertight unit.

The centerboard and rudder are cut from ½″ plywood, and covered with fiberglass.

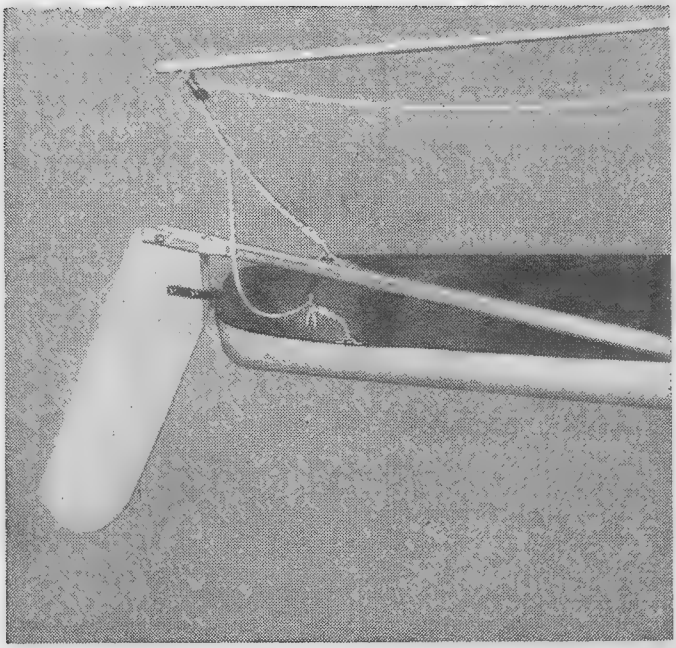
The mast is made from a piece of 2″ outer diameter aluminum tubing 8′ long. Turn wood plugs for each end, and epoxy in place. The top plug should be 4″ long, and the bottom plug 2″ long. The top plug will prevent the mast from deforming when the halyard block is bolted in place, and the sealed ends will ensure that it will float should the boat capsize.

Booms are of 1¼″ outer diameter aluminum tubing, 11′ long. Fit two aluminum plugs with eye bolts as shown in Fig. 3, and weld the nuts to the bolts to prevent them from working loose (Used double nuts snugged up tightly if you do not have welding equipment). The eye bolts are interlocked, and the plug assemblies are then expoxied into the ends of the booms. Tap 3″ lengths of wooden dowel into the booms to provide strength where eye straps and



Hull ready for sanding. Be sure to wear a dust mask and goggles when sanding fiberglass. Use a dust bag on sander. Fibers kicked up during sanding can cause irritation.

View of the aft section showing the rudder-tiller assembly. The rudder is made from ½" plywood and covered with fiberglass. Open ends of the booms are filled with 3" dowels.



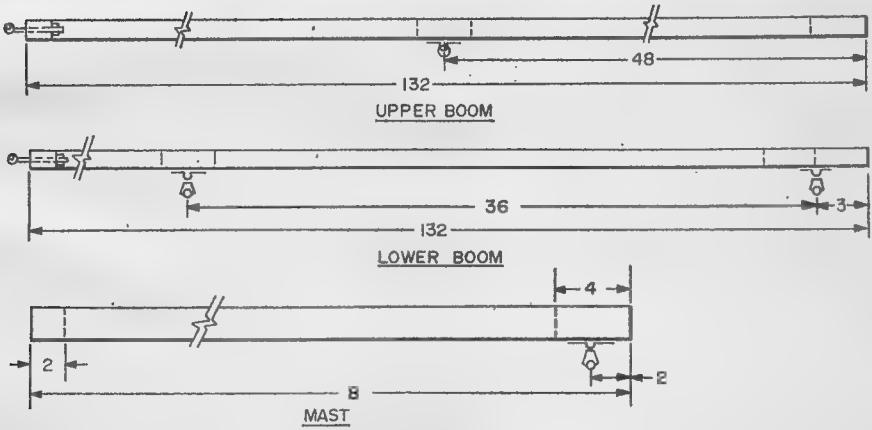
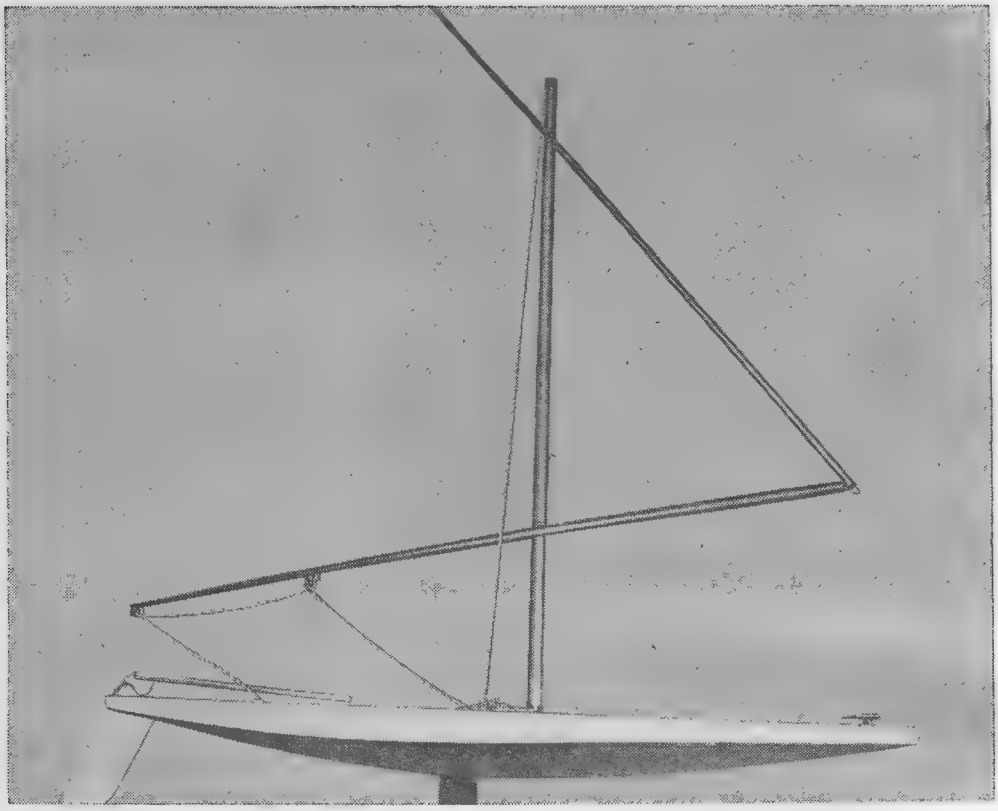


FIG. 4

BILL OF MATERIALS

1	Deck	⅜ Plywood Marine or Exterior 4' x 12'	2	Gudgen	Race Lite #RL-360
1	Double Mast Socket	¾ Plywood Exterior 12" x 12"	2	Boom	Aluminum Tube 1¼ OD x .065 Wall x 11'
4	Bow & Stern	1½ Pine May be built up	1	Mast	Aluminum Tube 2 OD x .083 Wall x 8'
2	Sides	¼ Plywood Exterior 6" x 12'	2	Eye Bolts	¼ NC with nuts and cotter pins. See Fig. 3
2	Side Supports	½ square Spruce or Fir	1	Sail	Dacron or Nylon, 3 oz or 4 oz, 22 ft. 36"W
1	Keel	¾" Plywood Exterior 9" x 12"	30	Grommets	#2, ⅜ ID Brass
2	Side Plates Centerboard	¾" Plywood Exterior	1	Dynel	12½' x 48"
2	Keel Stiffner	1⅝ x 45° Spruce or Fir 12'		Glass Cloth	40' x 48"
1	Halyard Fairlead or Kimro Kleak #CH-500	(2) ¼ ne, 1½ Lg brass bolts, nuts, cotter pins		Polyester Resin	7 gal. @ colored pigment
1	Mast Socket	J_1 3x6x¼ HRS, J_2 2⅜x3/16 wall tube 4 Lg., J_3 2⅜ Dia x ¼ HRS	1 gal.	Flotation Material	Polyurethane Foam
1	Tiller	1 x 1¼ x 33 Lg. Oak	3	Thimbles	Nylon for ¼ rope
2	Tiller Straps	¼ x 1¼ x 8½ Aluminum	25'	Nylon Rope	¼ Diameter
1	Rudder	½ Plywood 21"x9" M. Bronze Bushing ½ ID x ¾ OD x ¾ Lg.	1	Gooseneck Fitting	See Fig. 2-EE—Aluminum ¾ x ⅛
1	Centerboard	½ Plywood 27"x8½ @ 1½ sq. x 17 Hardwood	5	Wood Plug For Boom	3" Lg.
3	Swivel Eye Block	Race Lite #RL-321A	2	Plugs for Mast	(See Text)
3	Eye Strap	Race Lite #RL-311	3	Steel Rings	1½ OD
3	Deck Strap	Race Lite #RL-313	2	Aluminum Plug	1¾ x 1.125 Diameter
1	Pintle	Race Lite #RL-360-L			

Marine fittings, hardware and sail cloth may be obtained from Alan-Clarke Company, 235-289 Main St., Northport, New York 11768. Fiber glass, resin, Dynel may be obtained from Defender Industries, 384 Broadway, New York.



The finished boat. Sailboards are becoming increasingly popular. They provide exciting sport at a minimum of cost and effort.

blocks are attached. Epoxy dowels into the open end of each boom to make them watertight.

The gooseneck can be made from ⅛″ x ¾″ aluminum strap, as shown in Fig. 3. The loop that goes around the mask should be covered with plastic or rubber tubing to prevent chafing. Secure the small clamp to the boom with epoxy cement.

The sail should be made of 3 oz. or 4 oz. nylon or dacron, and the panels should be layed out as shown in Fig. 1. Contrasting colored fabric can be used to provide a striped sail. All seams should be of the French Fell type for maximum strength. A double-stitched hem 1½″ wide should go all around the outside edge of the sail. Install ⅜″ grommets, 18″ apart, along the edges of the sail to be attached to the booms, and use line or plastic clips to secure the sail to the booms.

If you haven't sailed before, you'll want to get the book, "Sail HO, A Primer for Sailfish & Sunfish." It's available from Alcort, Inc., Box 1345, Waterbury, Conn. 06720.

● To obtain enlarged plan for building Jamaican, Craft Print No. 371, see handy order form on last page of this issue.

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KID'S PADDLE-PUSHER

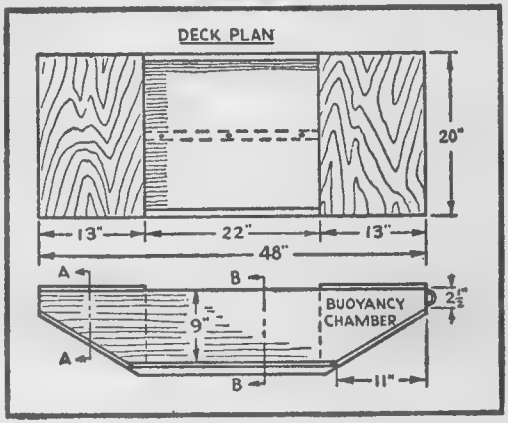
Here is a sturdy and easily-built scow for active young sea captains

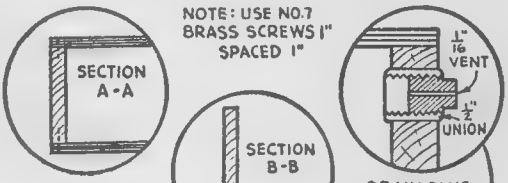
By HI SIBLEY

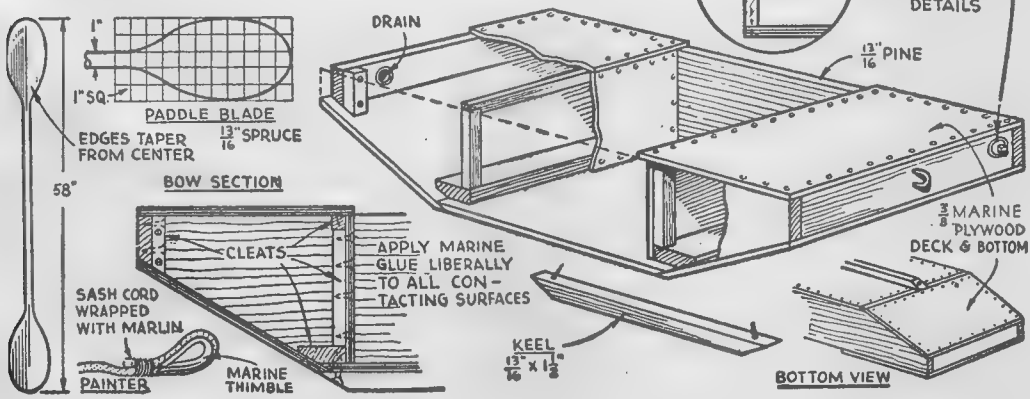
THE boy, who never had a boat, never had a boyhood, but there is no reason for him to be denied when you can build his first sea command as easily and inexpensively as this little scow. It makes no claims for beauty but is absolutely safe and, with the buoyancy chambers in each end, will float with cockpit full of water and a full crew aboard. And it is sturdily put together to take the beating which it most certainly will receive when active youngsters are turned loose with it.

If you are careful in fitting joints, no calking other than marine glue will be necessary. Make sides first and join them with the end members and cross-cleats at the break of the bottom. Apply marine glue liberally on all contacting surfaces, then screw on the bottom and sloping ends. Screws should be slightly counter-sunk. Install the inboard partitions of buoyancy chambers next, and then the decks. Each watertight compartment should have a drain plug, with a vent to equalize air pressure under varying temperatures.

The painter is secured to a large staple, clinched on the inside, and the craft can be moored in shallow water on a long line, permitting the skipper to paddle about without getting into dangerous waters. Although marine plywood is guaranteed water-resistant, it is a good idea to work paint well into the edges. Canary yellow is a recommended color for the outside, as it can be seen a long way on water if the boat drifts away. Paint the cockpit gray and varnish the deck in natural grain.

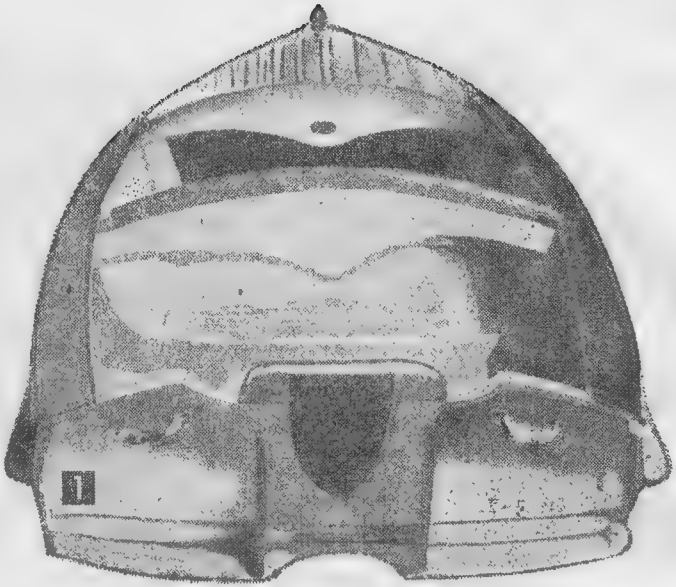






A Transom Bracket

For adapting outboard motors to individual boats



A transom bracket was attached to this 10-ft. outboard runabout to accommodate an Evinrude Fleetwin motor, and the performance of the boat was remarkably improved.

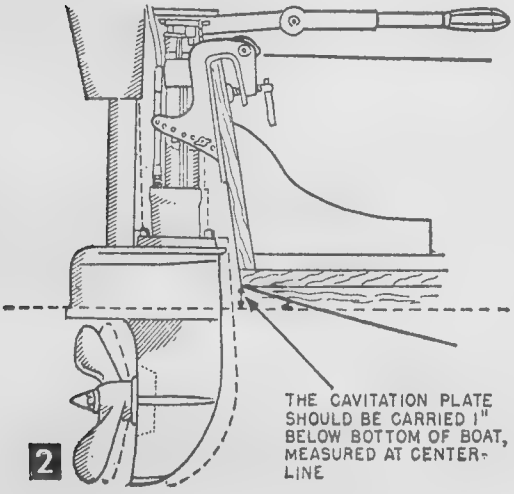
HOW well does your outboard motor match your boat? In many cases, if you don't have the best motor and boat combination, the performance of your boat can be greatly improved by modifying it with this quickly-assembled transom bracket.

Improvements in speed and maneuverability usually result when motors such as Evinrude, Mercury, Johnson, Scott, and others are raised 1 to 3 in. above the transom so that the cavitation plate is just about 1 in. below the bottom planking of the boat as in Fig. 2. This not only results in less gear case drag, but also allows you to navigate better in shallow waters.

Before you construct the bracket, raise your motor first with temporary blocks, and drive your boat on smooth and rough waters to determine the optimum height. Be careful not to set the motor too high, for this will cause dangerous cavitation.

Construct the bracket from a block of wood the same thickness as the transom, and attach the two ¼-in. plywood face plates to this block by means of #8 x 1-in. flathead screws as in Fig. 3.

You can attach the bracket permanently to the transom, or use it just as a temporary mounting for a different motor on the same boat. Regardless, you'll be agreeably surprised by the improved performance of your boat.—Wm. D. Jackson.



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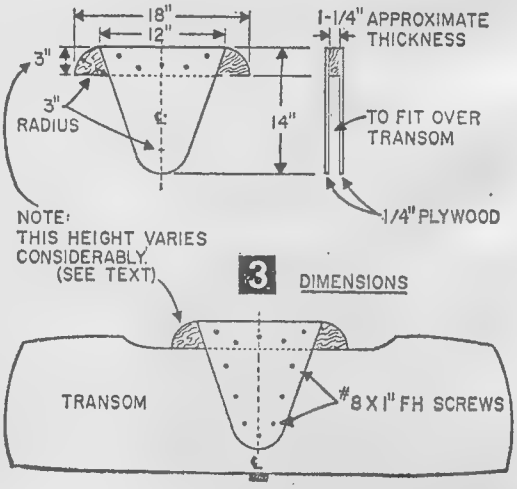
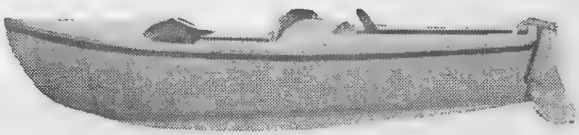


3 DIMENSIONS

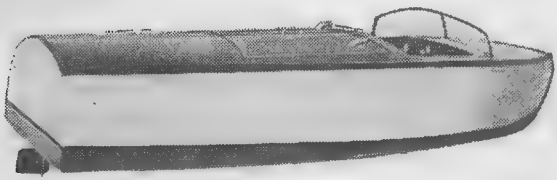
SELECT ONE OF THESE PLANS FOR YOUR NEXT PROJECT

CLASSIC DESIGNS

18. LIVERY SCOOTER. This was designed originally for the professional who wanted a fleet of safe, small, inboard-powered rental boats to offer to fishermen. It's a boat that will give you or your kids hours of enjoyment, and for power all you need is the engine off an old lawn mower. The outboard rudder gives it a salty appearance that's often lacking in boats of more recent styling. Length, 11′ 6″; beam, 54″.



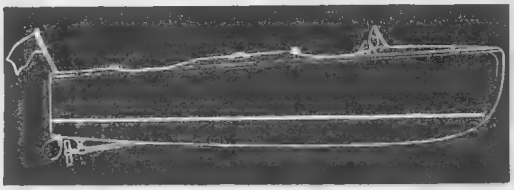
No. 18 Livery Scooter



No. 138 Sea Scout

138. SEA SCOUT. Here's a little inboard runabout reminiscent of the great Gar Wood and Chris-Craft boats of the days before World War II. It will give a comfortable ride for two in the single cockpit, and at moderate speeds with a 50 hp to 150 hp engine. Sides and bottom are made of exterior or marine grade plywood, a much simpler type of construction than the old planked hulls that "Sea Scout" resembles. Length, 13′ 6″; beam, 66″; draft, 6″.

150. NANCY JANE. This is an all-purpose inboard that can be built as a comfortable cruiser or a two-cockpit runabout of classic styling. With a length, beam, and depth generous enough to be usable anywhere, this seaworthy design provides a boat that can be used with a marine or converted auto engine of from 15 hp to 100 hp. With the exception of the framework, waterproof marine plywood is used for the hull to provide maximum strength with ease of building. Length, 18′ 9″; beam, 73″; depth amidships, 42″.



No. 150 Nancy Jane

No. 79 Shore Lark

79. SHORE LARK. Traditional outboard skiff can be built with lapped planks, or with a marine plywood skin. In either case the finished boat is strong and seaworthy. It will take motors from 1 hp to 25 hp; the smaller motors making it an ideal trolling rig with a 5 to 10 mph speed range, and the large motors giving it a speed of up to 35 mph. Design of "Shore Lark" eliminates all the difficult joiner work, yet gives you a sturdy boat at the fraction of the cost of a finished boat of this type. Length, 13′ 9″; beam, 56″.

105. TORPEDO. Bullet nose and turtle deck transom styling recall the "hot" runabouts of an earlier generation, yet her modern bottom is designed for speedy transportation over protected waters. It is easily and inexpensively built with marine plywood, and will provide a fast, comfortable ride for up to four persons. Length, 13′ 6″; beam, 54″; depth amidships, 22″; weight, 200 lbs. Use motors of 10 hp to 30 hp.

SAILBOATS

20. BLUE BIRD. This 10′ dinghy is exceptionally fast, and points fairly well. Without mast and rigging, it will handle easily with a pair of 6′ oars or a long shaft motor of not more than 3 hp. Construction is of mahogany, birch, or douglas fir exterior grade or marine grade plywood. Weight, complete, is 110 lbs., which make it suitable for cartopping. Length, 10′; beam, 53″; sail area, 60 sq. ft.

No. 53 Gypsy

53. GYPSY. The design for this motor-sailer includes improvements worked out in more than six years of prototype testing. As a result, "Gypsy" offers an ideal design for the boat lover who wants a sea-going craft that will literally go anywhere. Auxiliary engines of 10 hp to 25 hp will deliver speeds around 10 mph. With a fair wind, it will loaf along under sail at about 6 to 8 mph. Full-length ballasted keel adds to her stability. Building this boat is an ambitious undertaking, but your investment will pay handsome dividends over the years in relaxation, enjoyment, comfort, and satisfaction. Length overall, 24′ 7″; waterline length, 22′ 9″; beam, 9′ 2″; draft, 36″; displacement, 6000 lbs.; sail area, 350 sq. ft. Sleeping and cruising accommodations are ample for three adults.

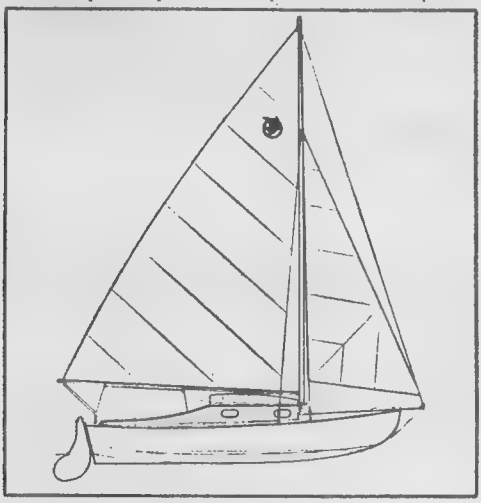
30. FALCON. As a general purpose sailboats, "Falcon" is ideal for bay, lake, and river sailing. It points well, and easily outdistances comparable sloops in the same size range, including such one-design craft as Comets and Snipes. Speed of the boat is little affected by load; she steps along in a lively manner with two or four persons aboard. Construction is of exterior or marine grade plywood over longitudinally-stressed frames. Length, 14′; beam, 70″; draft, 36″ centerboard down; sail area, 118 sq. ft.; displacement, 475 lbs.

324. SEA MITE. Sea Mite is a gaff-rigged sailer, or an outboarder—an all-around shoal draft utility for protected water fishing, hunting, and Sunday sailing. It will move easily through the water with the lightest breeze or smallest outboard motor. The modified sliding gunter sail rig can be completely stored in the boat when the boat is car-topped or trailered. Uses up to 5 hp motor. Building cost is about $75. Inverted-vee catamaran hull eliminates the need for a centerboard. Length, 10′; beam, 65″; draft, 3″.

330. MISSILE. This 19′ racing sailboat is designed for the backyard boatbuilder who wants competition or just plain speedy sailing. The underwater hull design has been chosen to give maximum speed and maneuverability. Somewhat surprising dividends are the ease with which the boat can be built, and the low cost of its materials. Construction is ⅜″ exterior or marine grade plywood over sawn frames, and a permanent, ballasted fin keel is used for stability. Length, 19′ 6″; beam, 50″; draft, 30″, sail area, 116 sq. ft.

No. 330 Missile

345. SUN FUN SAILER. Build this competition sailer at a 25 percent savings over other ready-built Moth-class racers. This

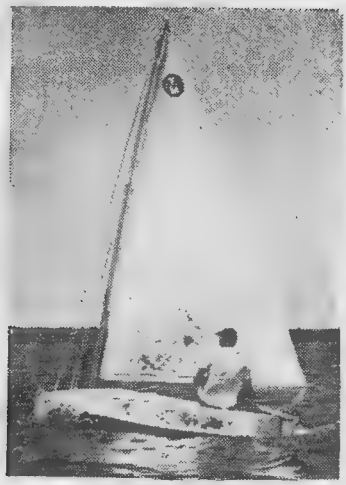


No. 106 Petrel

106. PETREL. As a sailboat, "Petrel" fulfills the greatest possible variety of uses in one model. It can be built as an open cockpit racing craft, or as a cabin cruiser with accommodations for overnight trips and shelter on fishing excursions. Cockpit seats four. Either model is constructed from the same basic design, and possesses unusual seaworthiness, stability, trim attractive lines, speed, and ability to handle well. Construction is easy and inexpensive, utilizing marine or exterior grade plywood. An outboard of up to 6 hp can be used for auxilliary power. Due to the simplified construction, ordinary carpenter's tools and only average skill are required to build this boat. Length, 16′; beam, 6′; depth, 23″ amidships; draft with fixed keel, 24″; draft with centerboard down, 30″; weight, 650 lbs.

No. 270 Sea Flea

270. SEA FLEA. Two plywood panels sandwiching a bare minimum of inner framing make up the unusual construction of this demon midget sailer. The lug rig used here works well, and its short, easily-dismantled spars can be carried atop a carry two safely, and its hair-trigegr action will provide the utmost in sailing sport. Length, 10′; beam, 48″; weight, hull, 90 lbs.; weight, spars, 15 lbs.; draft, centerboard down, 30″; sail area, 85 sq. ft. Full-size patterns No. 348 are available for Sea Flea.



No. 345 Sun Fun

one-design racing sailboat makes the most of nature's free-wheeling breezes for just plain sailing or for challenging the reigning Moth champion in your harbor. You can build it of inexpensive materials available from your local lumber yard, or use the alternate special materials listed if you plan to enter sailing competition. No special tools are needed to build "Sun Fun," and construction features are designed to keep waste to a minimum. Length, 10′ 11″; beam, 47″; draft, 30″, daggerboard down; sail area, approx. 72 sq. ft.

351. JUST-FOR-FUN. Whether you're off for an afternoon at the beach or an extended vacation tour, this leeboard scow should be riding on your cartop carrier for launching

No. 351 Just-For-Fun

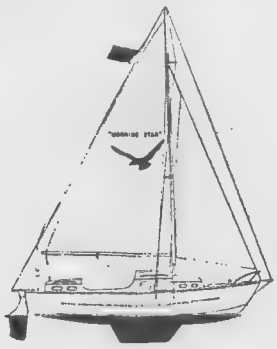
at your favorite lake or river. In about two weeks of your spare time, and for a cost of about $40, you can build the plywood hull and rig it with transparent plastic sails. Length, 10′; beam 48″; sail area, 85 sq. ft.; mast height, 14′.

356. TABU. By combining new materials with improved understanding of water dynamics, this 16′ sports sailer brings about a

No. 356 Tabu

new concept of high-speed sailing. Speeds of up to four times those of conventional boats of the same size are possible because Tabu planes on the surface of the water, rather than pushes its way through it. It performs much like the Polynesian hand-made boats that often exceed 20 mph. Here's your opportunity to build a craft that would cost about $2000, for a fraction of that figure. Length, 16′; beam, 5′ 8″; draft, daggerboard down, 30″; sail area, 165 sq. ft.; weight, 200 lbs.

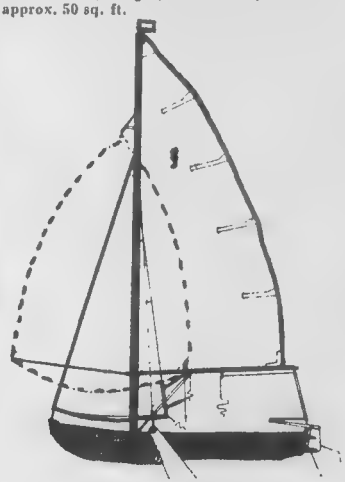
362. MORNING STAR. A major project, this salty sloop is bigger and more sturdy than some that have sailed around the world. With the cockpit separating fore and



No. 362 Morning Star

after cabins, extended cruises with four persons are possible. Her draft of only 3′ with keel or centerboard will allow her shoal water exploring and gunkholing along almost any inand or coastal waterway. Provision for auxiliary power makes passages possible with or without wind. The mast is stepped in a tabernacle atop the forward cabin. A hinged pivot allows the mast to be lowered to a horizontal position for stowage, or when the boat is being trailered. Length, 25′ 11″; beam, 7′ 11″; draft, 36″; displacement, 3360 lbs.

75. KINGFISHER. This modern version of the ancient Scandinavian pram is one of the versatile craft that may be found. It rows easily, sails well, and propels nicely with small outboard motors. It provides the greatest capacity in the shortest possible length, and it is light in weight and can be cartopped with ease. Construction is marine or exterior grade plywood, and all materials can be obtained at your local lumberyard. Length, 9′; beam, 48″; draft, 27″ centerboard down; weight, 90-100 lbs.; sail area approx. 50 sq. ft.



No. 366 Sea Horse

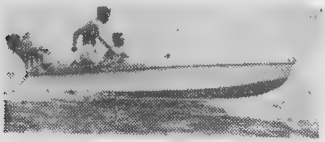
366. SEA HORSE. This lee board sloop has generous watertight compartments filled with Polystyrene foam, making it practically unsinkable. With the sailing rig removed and an outboard motor installed, she can be used for fishing or towing water skiers. Deck is flat and self-draining, making for plenty of freedom of action when sailing or playing a fish. "Sea Horse" has provision for two outboard motors, plus paddles or oars for rowing. Sail area is 156 sq. ft., and a 50 sq. ft. spinnaker can be added to the sail plan. Length, 12′ 6″; beam 4′ 6″; weight, 150 lbs. Outboards, single or dual, should total no more than 20 hp.

No. 359 Sailing Kit

359. SAILING KIT. Any skipper can be a sailor by adding this simple rig to a rowboat, runabout, dinghy, skiff, jon boat, or canoe. Square-sterned boats of 8′ to 14′ in length, and canoes of 12′ to 16′ are particularly suitable to this combination of sail and leeboard. Your cost should be less than $15.

OUTBOARDS

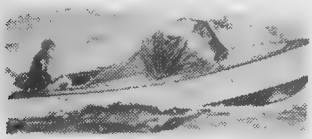
13. ZIPP. If you want a fast, sporty, and highly maneuverable runabout, "Zipp" is your baby. Designed to be used with outboard motors of 10 hp to 50 hp, it seats two in a small after-cockpit, and if you have a



No. 13 Zipp

pair of friends who want to come along, you can lift the forward hatch clear and take off as a foursome. For utmost speed, try carrying the motor just as high as possible without causing cavitation, and adjust it in and out until the best operating characteristics are found. Length, 13′ 2″; beam, 60″.

14. SEA GAL. This general purpose outboard has ample beam and weight to give her stability when the going gets rough. "Sea Gal" uses a minimum number of both



No. 14 Sea Gal

transverse and longitudinal framing members, but they are stout enough to provide exceptional strength. Lengh, 14′ 2″; beam, 5′ 4″; depth amidships, 23″; weight, 300 lbs. Use outboard motors up to 20 hp.

No. 24 Ranger

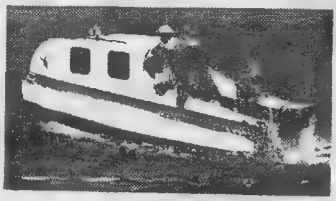
24. RANGER. Here's a handsome model of that happy combination—the cabin cruiser with outboard motor power. When powered with a 25-50 hp motor, "Ranger" will step along at speeds of 20 to 35 mph. She's easy on fuel and maintenance costs too, and you can transport her most anywhere by trailer. Two persons may sleep aboard, and there's room for a head, a small stove, and galley gear. Ideal for overnight trips, weekend cruises, and general sports use. Construction is sawn wood frames planked with exterior or marine grade plywood. Length, 16′ 10″; beam, 74″; depth amidships, 30″.

32. BUZZ. Here's a versatile, lightweight planing runabout with strong, sturdy construction features, and seats for four pas-

No. 32 Buzz

sengers. It maneuvers well in rough or smooth water, making turns easily at wide-open throttle. It's so light you can easily carry it on your cartop to your favorite lake, river, or bay. Construction is of plywood over hardwood frames. Length, 11′ 1″; beam, 55″; weight, 135 lbs.; use engines of 10 hp to 25 hp.

38. SUN FISH. This unconventional-looking cruisette is lightweight, takes outboard power, can be trailered easily, and has plenty of room aboard for two persons on

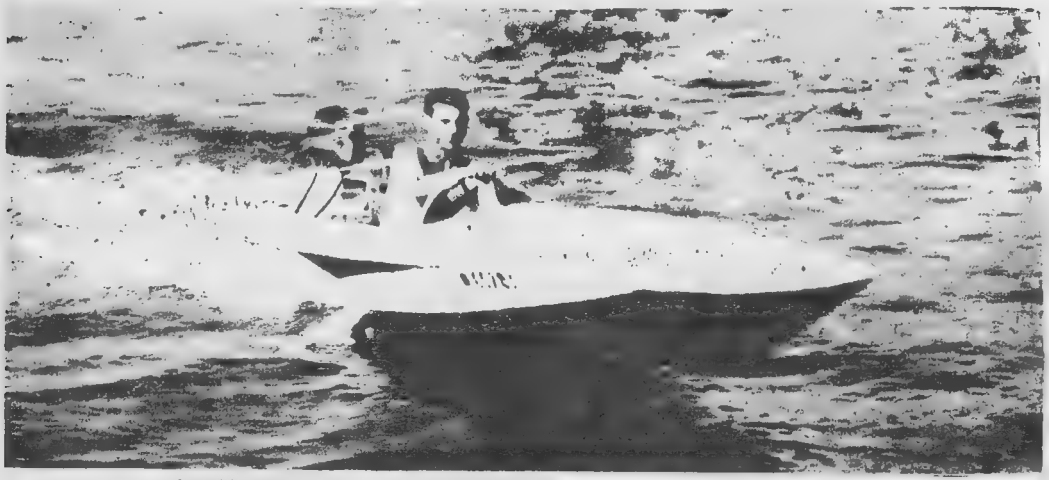


No. 38 Sun Fish

an overnight or weekend trip. The semi-scow type of bow makes it an extremely easy boat to build, using plywood sheets for bottom and side panels over hardwood frames. All the materials are readily available at your local lumberyard. Length, 13′ 6″; beam, 66″; depth amidships, 26″; weight, 375 lbs. Motors of 5 hp to 20 hp can be used.

55. FIRE-FLY. This is a high-speed single step hydroplane with a bottom design that makes it fast, efficient, and seaworthy on smooth or rough water. With a 50 hp outboard motor, it will plane easily with six-persons aboard, haul water skiers, and reach speeds near 60 mph. However, motors in the 25 hp range are recommended for safe per-

No. 55 Fire-Fly



355. MAXIMUS. This 12′ 6″ runabout can be built for about $35. A two-seater, it will do about 38 mph with a 20 hp outboard, and it can easily pull water skiers. No special forms are needed to build this zippy little wave-maker, just two saw horses to support the frame assembly. Paper patterns can be dispensed with too (with the exception of sheer plates and stem) by drawing the framing outlines directly on the pieces to be cut out. Length, 12′ 6″; beam, 60″

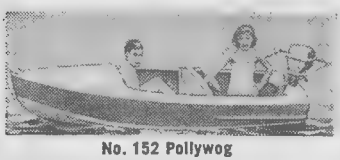
formance under normal operating conditions. Construction is of marine or exterior grade plywood over air-seasoned oak frames. Length, 14′; beam, 60″.

No. 104 Buddy

104. BUDDY. Here is a general utility boat designed to serve the greatest possible variety of purposes and to serve each one well. "Buddy's" hull seats three or four passengers and performs with stability and seaworthiness in rough or smooth water. It's an easily-rowed skiff, and it will take outboards of 1 hp to 6 hp. You can even rig it for sailing, if desired. Plywood construction makes it easy to build, light in weight, and permanently leakproof. Length, 13′; beam, 56″.

No. 113 Jazz Baby

113. JAZZ BABY. This is a little multi-purpose boat that will step along nicely with moderate outboard power; it's even easy to row because of its light weight and semi-vee bottom. Use it for fishing, hunting, or exploration trips on protected waterways. Length, 12′; beam, 52″; depth amidships, 24″; weight, 150 lbs.; capacity, 4 persons.



No. 152 Pollywog

152. POLLYWOG. Here is a planing-type outboard utility that is unusually fast and is quite maneuverable at high speed. Its ample beam and detph make it a good, safe boat in normal use on protected waters. Construction is of plywood over hardwood frames. Length, 11′ 6″; beam, 56″; weight, 175 lbs. Motors of 10 hp are recommended for use with this boat.

154. MUSTANG. You can't build three boats for the price of one, but you can take

No. 154 Mustang

a sound, basic design and vary the dimensions to produce three boats that meet different needs. This plan enables you to build a 10′ lightweight, speedy outboard runabout (for 12′ and 14′ versions, see Craft Print 155, below). These boats are designed to really ride on the propeller and a small amount of spray at high speeds. Length, 10′; beam, 53″; capacity, two persons. Use motors up to 8 hp.

155. MUSTANG. Here are plans for the big brothers of the boat described above: the 12′ and 14′ versions of the same hull. The 12′ model may be built as a standard runabout with relatively high freeboard, or as a racy, sporty low-freeboard speedster. The 14′ version makes an excellent all-purpose runabout. Construction is plywood over hardwood frames for ease of building and minimum cost. Length, 12′ or 14′; beam, 53″; Use outboard motors in the 15 hp to 25 hp range.

175. EAGER EVE. This little 18-footer has the look of a large luxury cruiser, and though relatively small, it will carry four

No. 175 Eager Eve

persons in its cockpit, or sleep two in the cabin. A cover over the outboard motor helps it to masquerade as an inboard, but it has more maneuverability than an inboard boat of comparable size. Also, you can easily transport "Eager Eve" on a trailer, or store it in a garage. With a convex-vee developed curve bottom, it is just the boat for cruises, sports use, or pulling water skiers. Construction is marine or exterior grade plywood over hardwood frames. Length, 18′; beam, 6′ 1″; weight, 600 lbs. Recommended power is 25 hp.

185. BLUE STREAK. Prop-riding on her hydro-conic bottom, "Blue Streak" takes Class B outboard motors for a merry spin in stock utility races, and has been clocked

No. 185 Blue Streak

at 39 mph with one person aboard. The special design enables you to make fast turns, for the upsweep sides keep her plastered to the water surface. Only two frames and a transom with plywood skin make her easy to build, and most of the difficult joinery has been eliminated by the design. Length, 11′; beam, 54″; weight, 130 lbs.

276. BEBOP. Youngsters will have the time of their lives, and always remember the fun they had in this runabout that's scaled down

No. 276 Bebop

to just the right size for them. It's a flat-bottom plywood hull designed for no more than 3½ hp outboard motors, and to be used only on protected waters. It will seat three children, and has a maximum speed of 10 mph. Length, 8′; beam, 48″.

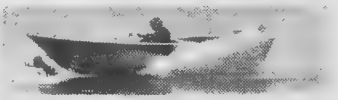
307. FIREBIRD. Sleek, deluxe outboard runabout provides superlative performance as stepped hydroplane type hull helps to get the most from motors of even modest power. It's an excellent ski tow boat, as well as a boat for general watersports, and will do up to 50 mph with a motor of 60 hp—the maximum recommended power for this rig. Construction is simple, as plywood panels are used to cover hardwood frames, and cost for materials should run less than $175. Length, 14′; beam, 73″; depth amidships, 23″; weight, 400 lbs.; capacity, four persons.

310. PLAYMATE. Hard-top cabin design with open end offers protection from sun and rain without restricting size of cockpit on this 17-footer. Two berths extend from the side seats under the foredeck, so you can use it for overnight cruising. The low planing angle and beveled chines in the after section make the hull a dry one. Not an off-shore rig, it's designed for use on protected waters

No. 310 Playmate

of bays, and on small lakes and rivers Length, 17′ 4″; beam, 7′ 4″; draft, 3″ with outboard motor tilted up; weight, 450 lbs. without motor. Motors in the 35 hp to 50 hp range will produce speeds to 34 mph.

313. SEA FURY. Now you can build a sleek sports runabout using a three-point racing-type hull similar to those that have captured championship trophies in hydro-class com-



No. 313 Sea Fury

petition. And your total outlay for materials will be about $150! With 35-40 hp outboard motors, "Sea Fury" will begin to plane in her own length, and becomes airborne at speeds of 45-50 mph. Construction is of marine or exterior grade plywood over hardwood frames. Length, 15′ 4″; beam, 79″; weight, 425 lbs.; seating capacity, three persons.

OUTBOARDS

No. 353 Veep

353. VEEP. An inverted V in the forward cross section of this sea sled stands for victory over the hydrostatic forces that tend to keep ordinary hulls slogging through the water. Construction is as simple as possible or a boat offering as much performance and roominess as this one. A minimum number of sawn wood frames support a tough stressed skin of ¾" marine or exterior grade plywood. "Veep" can be built at a cost of about $160, and will take an outboard motor of up to 45 hp. Length, 14' 6"; beam, 82"; depth amidships, 34".

354. SKEETO. Here's a boat that converts horsepower to mph in a way not possible with a standard runabout. It will take the beating that a ski tow boat gets regularly, it has a large, open cockpit that will take driver, observer, and passengers as well as hold all the skiing gear, and it has clean lines and comfort in a safe design. Length, 14' 10"; beam, 80". Use motors of up to 60 hp.

No. 354 Skeeto

46. DOODLE BUG. You'll like this trim, single-cockpit outboard hydroplane; its new type of convex bottom and no-tripping chines combine to produce a remarkably fast boat

No. 46 Doodle Bug

with excellent maneuverability. The design was evolved by selecting the best points from a series of small hydroplanes and combining them in this one boat. Length, 12'; beam, 57". Engines of 9 hp to 25 hp are recommended.

343. MINIMOST. Build this 8' outboard sports hydroplane for $15-$20 in just 15 hours. By using stressed-skin construction and advanced underhull design, it's possible to wring speeds well up into the 30 mph range with any of the lightweight 10 hp outboard motors now available. The unique construction procedure puts "Minimost" in a class by itself. No form is required when you shape the bottom plank, build framework assembly, assemble plank and frame, and fit deck in place. Needless to say, the low cost and construction time means more hours and money that can be used to show off your new hydro. Length, 8'; beam, 60". Full-size pattern Set 344 is also available for "Minimost.".

157. SKEETER. Here's a nautical "punkin seed" that will whip the pants off many highly-touted commercial speedboats. In fact, she's just enough boat to support the driver and motor—the rest is pure flying. "Skeeter" is not designed for sanctioned races as she won't make their tight hairpin

No. 157 Skeeter

turns, but given a little space she banks nicely without tripping or capsizing. You water bugs who want speed will find it in every line of this boat! Even though there are only three frames, the overall strength-to-weight ratio is high, and "Skeeter" will withstand fast driving and indefinite pounding. She planes readily with motors of 5 hp, and will take up to 10 hp, giving a speed of about 40 mph. Length, 7' 10"; beam, 46"; depth, 12" amidships; weight, 85 lbs.

No. 161 Hornet

161. HORNET. This sleek 11' hydro is several notches above more standardized models in terms of speed. You'll find she also requires a bit more skill in building, but that never stopped a dyed-in-the-wool craftsman. "Hornet's" speed lies in her bottom lines and in her motor angle, and she'll do well over 40 mph. Rounded stem fairing into the streamlined body presents the least possible wind resistance, and wide, non-tripping chines insure safety when making turns at high speeds. Length, 11'; beam, 54"; depth amidships, 12"; weight, 130 lbs. Use outboard motors of no more than 35 hp.

165. YELLOW JACKET. If you really want speed, here's a "hot-rod" speedboat that will

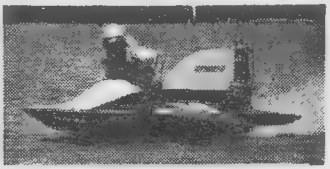
No. 165 Yellow Jacket

do 39 mph with a Class A motor (7.5 to 15 cu. in. disp.), or 45 mph with a Class B outboard motor (15 to 20 cu. in. displacement). Hull weight is within the 100 lb. requirement for class A racing. The design incorporates very low center of gravity, improved hull bracing, and streamlining, so it can turn at very high speeds without tripping. Hull construction is of exterior grade plywood, with a fabric deck. Length, 8'; beam, 47".

174. BLITZEN. The first "Blitzen" we built was bought by a boat manufacturer who wanted to win some Class B runabout races, and he did just that! Using a Mercury with

No. 174 Blitzen

special lower unit, he clocked a top speed of 47 mph. Actually, the design can be used as an ideal fast utility runabout as well as for racing, as two hull styles are given in the plans. Construction is of exterior or marine grade plywood over specially stressed framework that uses only two frames and a minimum number of joints. Length 11' 2"; beam, 53"; depth amidships, 15"; weight, 185 lbs.; capacity, four persons. Use motors of 10 hp to 25 hp.



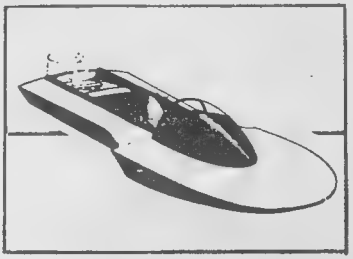
No. 297 Airmarine Special

297. AIRMARINE SPECIAL. A two-point prop-rider competition hydroplane designed for Class F events sanctioned by the American Power Boat Association, this craft incorporates 25 years of racing hull design experience. It has hit over 85 mph in competition, and has been clocked at 90 mph on the straightaway. Length is 11' 8"; beam, 76" at sponsons; weight, 275 lbs. Use outboard engines of 40 to 60 cu. in. displacement, 75 hp maximum.

349. 3-POINT SPORTS HYDRO. Competition-bred two-passenger hydroplane features maximum efficiency, reaching speeds of 50 mph with outboard motors in the 40 hp to 50 hp range. Construction is of plywood over

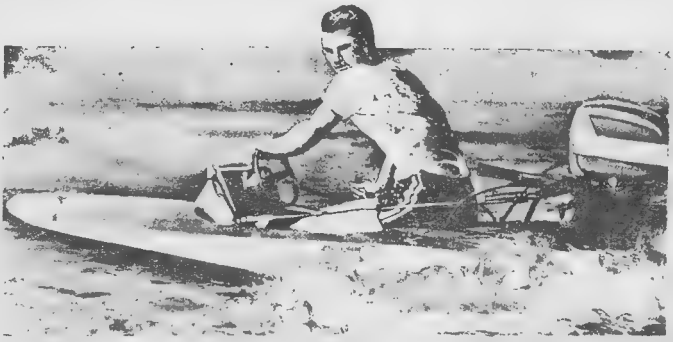
hardwood frames, and full-size patterns for frames and other structural parts are supplied. Length, 13' 7"; beam, 80".

363. CAB-OVER-HYDRO. Three-point hydroplane features far-forward driving position that helps to keep the nose level when speeds get up into the 75 mph bracket. This



No. 363 Cab-Over Hydro

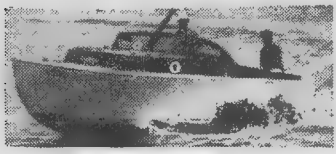
is really a hot boat, and is not for the unskilled driver. Construction is of marine plywood over hardwood frames. Length is 14'. Use outboard motors of 50 hp to 100 hp



255. MINIMAX. For minimum cost and maximum performance you can't beat "Minimax." Actually, it was built in one day at a cost of less than $30.00. It will carry two persons, take outboard motors ranging from 3 hp to 15 hp, and has a watertight air compartment that will support 900 lbs. even with the cockpit completely filled with water. As to performance, it will plane a 165 lb. man up to 15 mph with a 3 hp motor. With motors of 10 hp or more, "Minimax" just about rides on the engine's cavitation plate. Length, 8'; beam, 48"; weight, 68 lbs. Full size patterns No. 347 are available for "Minimax."

INBOARDS

31. WHIZZ. Here's a boat that appeals to those who want their cruisers fast, sporty, and small enough to carry by trailer. It's designed for weekend trips or overnight cruises with two persons aboard, and it will comfortably take four for an afternoon's



No. 31 Whizz

outing. By using an inboard marine engine or auto conversion of about 60 hp, you'll get speed to 20 mph. Construction is of exterior plywood laid over a longitudinally-stressed framework, and the vee-bottom configuration provides soft riding qualities and great maneuverability. Length, 21'; beam, 84"; weight, 1600 lbs.

36. CHUM. Here's a speedy inboard runabout designed for use with a converted Jeep engine, although any lightweight high-speed engine in the 25 hp to 100 hp range is suitable. Build it with either a single cockpit or

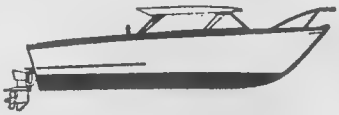
No. 36 Chum

double cockpit; you'll have a sprightly boat of which you will be proud. Construction is exterior marine plywood over a hardwood framework, so it will stand up indefinitely under all conditions of usage. Length, 15' 6"; beam, 72"; maximum draft, 20".

62. DOLPHIN. This trailer boat is the answer to low-cost travel over protected waters. The hull is light enough to be transported anywhere by trailer, and will accommodate two persons for extended cruising or a party of four for day cruises. Construction and operating costs are low. Plywood is used throughout, and the hull is designed to exact the utmost from low-power inboard engines. Outboard motors can be used in place of an inboard, if a suitable opening is cut in the transom. Length, 16'; beam, 69".

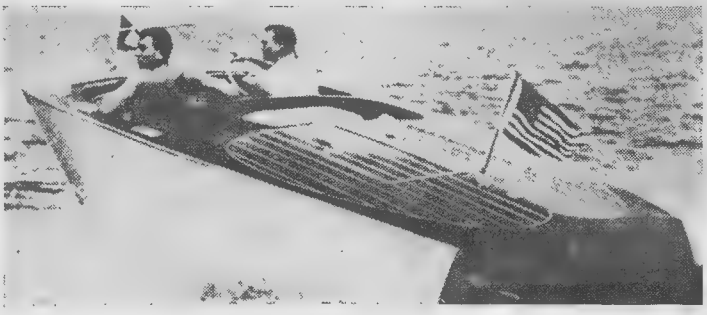
327. RIVIERA. You can do more than just wish you had a sleek, powerful, mahogany-decked runabout like Riviera . . . you can turn out this eye-appealing 38 mph boat and spend only a fifth the price of even modest boats of the same size and power. It's a six-place luxury runabout for ski towing and all water sports, and it may be powered with inboards in the 100-225 hp range. Use a standard marine engine, or a converted auto engine. It may be further fitted to your pocketbook by bargain-hunting, and using just the amount of trim you wish. It's up-to-date in design, and planned to provide years of dependable service. Length, 17'; beam, 7' 4"; draft, 16"; weight, 1250 lbs.

360. DEEP-V SEA ANGLER. At last you can build your own deep-V boat and get the same comfortable riding characteristics demonstrated by the highly successul modern offshore power racers. The deep-V minimizes

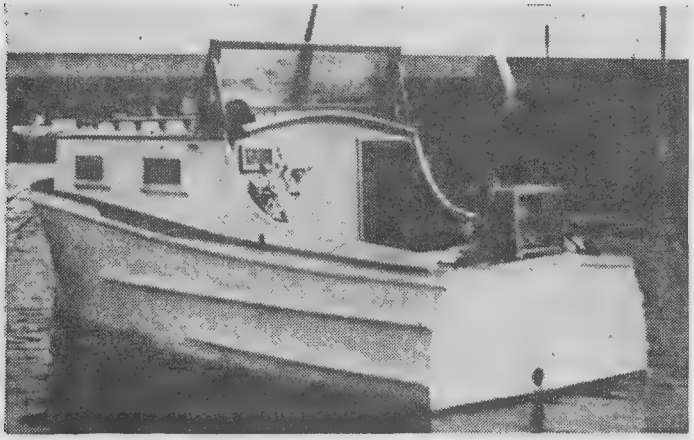


No. 360 Deep-V Sea Angler

pounding in even the most severe conditions, and longitudinal strakes help to provide lift and lateral stability. Use one of the hot new stern drive inboard engines, or a pair of big outboards, and you'll get speeds in the 40 mph range. You can build it with the top as a permanent or removable unit, or use a convertible navy top. Length, 20'; beam, 8'; depth amidships, 43"; displacement, outboard, 1700 lbs.; displacement, inboard, 2200 lbs.-2400 lbs. Engine or engines should total no more than 200 hp.



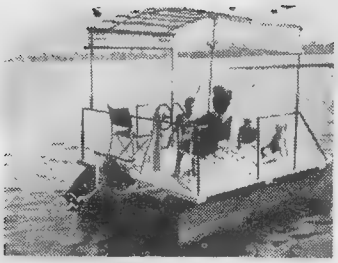
No. 327 Riviera



No. 78 Sportsman

78. SPORTSMAN. For fun, it will be difficult to beat the "Sportsman" for a combination of runabout and cruiser features. It's a seaworthy, open-water semi-planing boat for weekend cruises or short overnight fishing trips, yet it's small enough to be easily trailered. Designed for inboard power of up to 90 hp, it will go places in a hurry and provide protection during inclement weather. It will sleep two in comfort; seating capacity is four persons. Construction is sawn wood frames, carvel planking over battens on the sides, and lapstrake planked bottom. Length, 18' 9"; beam, 6'; depth, 3' 6"; weight, approx. 1700 lbs.

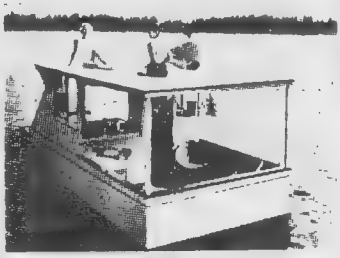
HOUSEBOATS, PONTOON BOATS



No. 312 Planing Pontooner

312. PLANING PONTOONER. Your entire family can take to the water on this pontoon family boat, for sun bathing, swimming, or fishing parties. And there is plenty of room for the charcoal broiler too, so you can have barbecues and fish frys aboard your "patio on the pond." The 80 sq. ft. deck will support up to 1500 lbs. in an emergency. Construction is completely-fiberglassed plywood pontoons, so it is virtually unsinkable. It will do 10 mph with an 800 lb. load and a 3 hp outboard; with a 20 hp motor it will do about 14 mph. It can be trailered easily to any launching site. Length, 11′ 7″; beam, 7′ 11″; weight, 500 lbs.

352. PARTI-O. You can take the family on luxury cruises, entertain friends on weekends, or go on all-day fishing trips with this semi-sheltered floating patio. It's great, too, as a swimming dock or for sun bathing—even for moonlight dancing parties on your favorite lake or river. There are no compound curves in the construction, and all materials are available from your local lumberyard. Once the basic structure is made up of lumber frames and plywood panels, you can choose the finishing touches and trim from materials most readily available to you. Length, 20′; beam, 94″; recommended power, outboards of 15- to 25 hp.

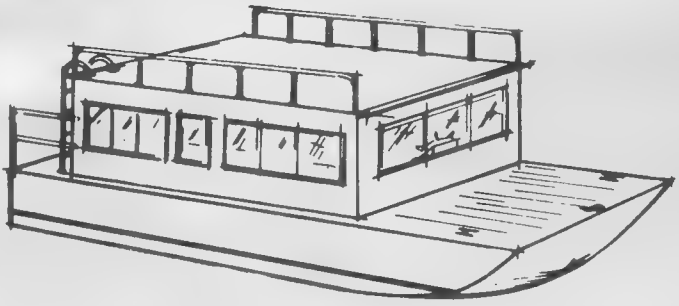


No. 352 Parti-O

369. FLOAT-A-HOME. Here is a 21-footer that provides plenty of living space for three or four persons, combining most of the comforts of home with the mobility of a boat. An extremely simple craft to build, it features a heavy keel and close-spaced framing. This, coupled with a relatively low profile, make it extremely stable. The conning room is designed to provide an unobstructed view forward and to the sides through glare-proof swing-away windows. Single or twin outboards can be used, with up to a total of 120 hp. Building cost is approximately $850. Length, 21′; beam, 7′ 3″.

No. 369 Float-a-Home

364. BAYOU BELLE. Here's a 25′ scow hull that can be finished off as a houseboat, a sports utility, or a fishing boat. As a sports utility she can be used for towing water skiers and for cruising. As a fishing boat, she offers a stable platform with plenty of elbow room, and as a houseboat she has roomy interior accommodations for a leisurely life afloat. Construction is of exterior or marine grade plywood over fir frames, and only simple hand tools are needed. Length, 25′ 8″; beam, 8′; depth of hull, 38″; displacement, bare hull, 1500 lbs.; gross capacity, 3000 lbs. Power can be supplied by outboards of 15 to 100 hp.



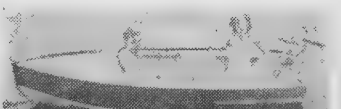
No. 364 Bayou Belle

CANOES, KAYAKS

60. LITTLE CHIEF. Here's the traditional Indian canoe in a simple-to-build version. It has attractive molded lines, and it may be built either as a paddling model, or with slight modifications, adapted for use with small outboard motors. Frames and stringers are covered with heavy cotton duck or muslin. Every detail is explained in your plans, and even details for making your own paddle are given. Length, 14′ 6″; beam, 38″.

80. BLUE BILL. Kayak/canoe features framework construction of a kayak with canoe bow and stern. Framework can be covered with canvas or with fiberglass for extra strength. Boat can be built with a square stern to take outboard motors of up to 6 hp. Length, 13′ 6″; beam, 3′ 2″; depth, 12″, weight, 75 lbs.; capacity, three persons.

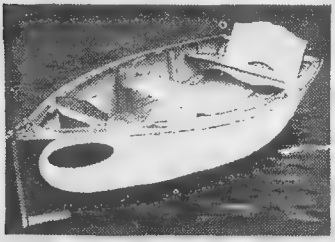
No. 80 Blue Bill



300. HUNTING KAYAK. If you want to explore for game in the shallow back waterways (where noisy motorboats can't go), this two-seater kayak is for you. A simple double-ender of plywood, its flat bottom design makes it easy to build and to paddle. Use it for hunting, fishing, and general sports on protected waters of small lakes or rivers. Length, 18′; beam, 40″; depth, 11″; weight, 100 lbs.

ROWBOATS, PRAMS, SKIFFS, DINGHIES

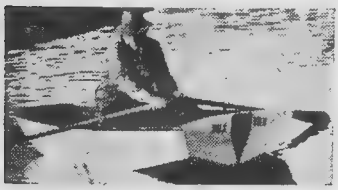
47. WIDGETT. Simple rowing skiff has been planned so that it can be built quickly and cheaply, either as an individual boat for your own use, or in quantity for livery



No. 47 Widgett

service. It is beamy and stable on any protected waterway, and despite its simplified construction, it is immensely strong and durable. Length, 12′ 8″; beam, 54″.

54. CAR TOP BOAT. If you're a lake fisherman who likes frequent changes of scenery, this lightweight pram will permit you to drop a line in any body of water to which your



No. 54 Auto Top Boat

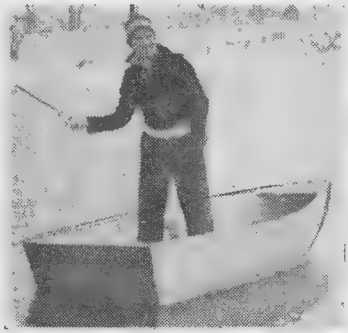
car is able to transport you. It's designed for two persons, but will accommodate three without swamping. Length, 7′ 10″; beam, 46½″.

59. JUNIOR. "Junior" is a yacht dinghy, but unlike many of this breed, it is neither cranky nor hard to row. Ample dimensions make it easy to handle, and it will carry up to even four adults. Its light weight makes it easy to cartop, so it can be used for fishing or hunting, as well as for a yacht tender. Length, 8′ 6″; beam, 54″.

64. SEA SKIFF. Here is one boat that combines all of the best features of many types of skiff. It may be rowed, or powered by air-cooled inboard motors, or outboards, or even

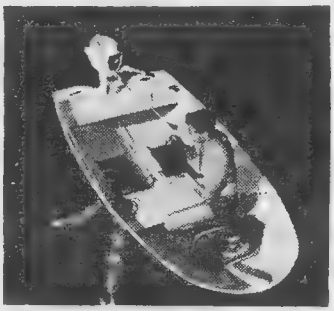
No. 64 Sea Skiff

rigged for sailing. As a sailer, it is dry, light, and fast in a good breeze. Length, 13′ 6″; beam, 60″; seating capacity, five adults.



No. 107 Handy Andy

107. HANDY ANDY. This skiff is designed as a portable boat for camper, hunter, fisherman, and outdoors man who needs a boat that can be used on any sheltered waterway, but doesn't have room to tow or carry the average rigid one-piece craft. "Handy Andy" folds to a compact, flat bundle that may be easily carried in an auto, an airplane, or even on a cruiser. It's the answer to those hard-to-reach places where conventional boats can't be transported. Marine plywood construction makes it easy to build, and strong. Length, 10′; beam, 42″, depth amidships, 15″; weight, 80 lbs.; capacity, three persons.



No. 306 Glass Bottom Boat

306. GLASS BOTTOM BOAT. You can build this glass-paneled gadabout for less than $50, or add glass "windows" to your present flat-bottom boat for about $10. Such a boat will open up a colorful new world of underwater excitement. And when you use such a see-through boat with an underwater intercom, you have the ideal combination for a team diving effort, for unlimited fun, adventure, and exploration. Length, 9′ 5″; beam, 56″; weight, 95 lbs.; capacity, 3-4 adults. Recommended outboard power is 6 hp, maximum.

357. MOBY DICK. Besides being inexpensive and easy to build, this is a flexible craft that can be used for rowing, sailing, and as a powered dory. Based on the lines of the famous Grand Banks dories, she has the feeling of being tender in calm water, but is stable and seaworthy even when the going is rough. Length, 15′ 8″; beam, 5′; depth, 18″; weight, 125 to 160 lbs.

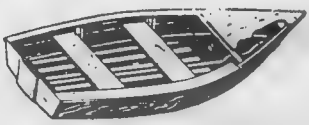
311. JON BOAT. Featherweight construction and squared ends combine to provide an easily transportable and spacious sportsman's skiff. Add a car-top carrier and an

No. 311 Jon Boat

outboard of 1 hp to 6 hp, and you're free to go anywhere in search of fish, fowl, and fun. Length, 12′; beam, 5′; weight, 110 lbs. Capacity, three adults.

288. CAN'T SINK. Hull of "Can't Sink" normally floats high and dry, but if it becomes swamped, built-in air chambers keep it afloat. This lightweight dinghy is ideal for fishing, or carrying passengers. Length, 9′ 6″; beam, 47″; weight, 85 lbs.; capacity, three adults.

365. SNAPPER. This is one of the easiest boats to construct that we have ever seen. If you have average skill with regular carpenter tools, the job should take you about 15 hours; as a bonus, the cost of materials should come to less than $60. "Snapper" is a wide-beamed, lightweight



No. 365 Snapper

fishing boat designed for use on sheltered waters, and it can be car-topped easily. It can be a boat for the kids, an ideal power or rowing skiff, or a fascinating and inexpensive introduction to boatbuilding. "Snapper"[2] is a fulfilling exercise for the person who has a desire to prove to himself that he can build and complete a do-it-yourself project. Length, 11′ 3″; beam, 60″; weight, 125 lbs. Maximum recommended power is 10 hp.

367. ROBIN. This little utility can play many roles, and very well indeed. Powered by a small outboard motor, it moves along briskly. Use it as a hunting or fishing skiff, yacht club tender, or work boat. It is rugged, extremely simple to build, and construction

No. 367 Robin

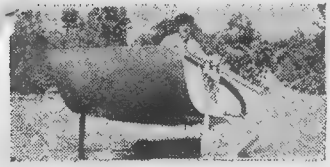
cost is roughly $150. No special building form is needed, and only simple hand tools are required. Length, 12′; beam, 61″. Motors in the 7-10 hp range are recommended.

No. 199 Swift Swoose

199. SWIFT SWOOSE. An odd-looking craft, the "Swoose," but she'll do up to 45 mph, and is stable as a church pew. The hull is basically a catamaran, and when planing, it rides on a little bit of each hull, and a cushion of air. Use fir for framing, oak or yellow pine for longitudinal structural members, and exterior grade plywood for the skin. All are available at your local lumberyard. Length, 10'; beam, 5' 1"; depth, 22"; weight, 150 lbs.; capacity, four persons. Use outboards of 5 to 25 hp.

299. SCOOTER. Stable as a raft, this little aquaplane has a scow-type hull for sport or utility use (carrying gear and provisions from boat to shore, as a floating platform for working on or washing down the sides of a large craft) and will float up to 800 lbs. of gear. It's a stand-up ride; you hold onto the handlebars, and steer by leaning your weight in the direction you want to go. Construction is of plywood, and hull is watertight. Length, 8'; beam, 48"; weight, 47 lbs. less motor. Takes outboard motors of 3 to 7 hp.

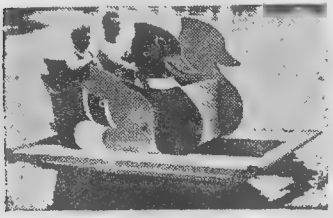
304. HYDROFOIL BOAT. Hydrofoils are itself fun blades under a hull that provide as aircraft wings lift the plane At cruising speeds and above, the



No. 304 Hydrofoil Boat

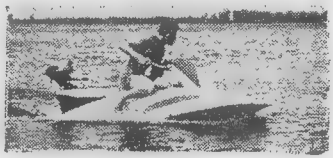
boat's hull is completely free of the water, and the craft rides on just the foils. Plans allow you to build a flat-bottom, scow-type hull with retractable, detachable foils. Boat is of marine plywood construction, and foils are of steel framework with fiberglass lift surfaces. Boat length, 10'; beam, 48"; weight, 200 lbs. with foils and equipment. Use long shaft outboard motors of 10 hp to 40 hp.

322. MARTY, THE PADDLE-WHEELING MALLARD. You may want just one of these paddle-wheel fun-abouts to help the children enjoy their vacation, or you may decide to build a flock of these attractive ducks to brighten your resort and its bank account too. Construction is easy on the pocketbook because it doesn't require marine grade lumber, paint, or fastenings. It's especially safe for children because of built-in Styrofoam flotation that will support 1000 lbs. by itself. Length, 9'; beam, 66".



No. 322 Marty

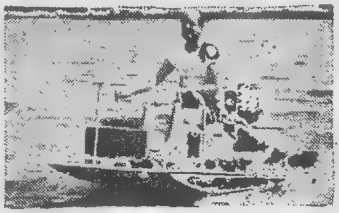
323. DINGBAT. You can build this most-fun-per-horsepower waterscooter on Saturday, and have it in the water for a full day of boating thrills on Sunday. Water-going



No. 323 Dingbat

motorscooter has handlebar steering, uses outboard motors up to 10 hp. Construction is of exterior or marine grade plywood over hardwood frame members. Length, 8'; beam,

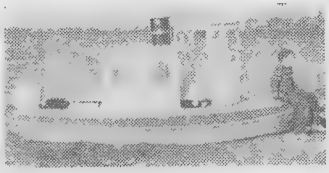
333. ZIPPER. Catamaan ski-boat fills the bill as a planing sports boat, a water skier, racer, ski-tow boat, surfboard, fishing raft, or diving platform. "Zipper" rides like a



No. 333 Zipper

pair of water skis, and you maneuver by gently nudging the tiller bar with your feet. Speeds to 36 mph are possible. Length, 8'; beam, 46". Use outboard motors of 5 hp to 18 hp.

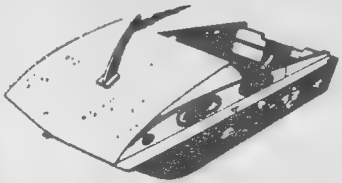
336. CAP'N JACK. "Cap'n Jack" was designed specifically for young'uns to use while going to the rescue of maidens, aiding vessels in distress, or closing in on hapless smugglers. But, if you can get the tugboat



No. 336 Cap'n Jack

crew to sleep late one morning, it will take you only 15 minutes to remove the superstructure—and there's a roomy, open boat for a quick fishing trip. You can build the boat and cabin during a weekend, using fir exterior plywood and fir lumber available from your local lumberyard. Construction cost should run less than $65. Length, 15'; beam, 67"; motors of 10 hp to 15 hp are recommended.

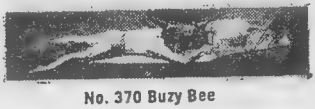
361. HUCK FINN. An unconventional boat designed for the youngsters, "Huck Finn" resembles a space ship, and it can be built for "peanuts." Construction is of plywood,



No. 361 Huck Finn

and it's quite simple as no building jig or expensive tools are needed. Length, 10'; beam, 54"; depth amidships, 22"; weight, 125 lbs. Outboard motors of 5 hp or 6 hp are recommended.

370. BUZY BEE. Not a toy, it's a real fun boat designed to cover a lot of territory. A Plexiglas window allows you to see clearly what's on the bottom, and there's space aboard for small equipment such as a spear



No. 370 Buzy Bee

gun or gaff. You can build it in a single weekend for roughly $100 including the inboard engine. You steer it by shifting your feet, and it has a dead man's throttle and shielded prop for added safety. Length, 4' 8"; beam, 30".

170. SURF-SAIL-ICE BOAT. Summer or winter this little sailboard is ready for action. Use it as a sun bathing raft, an aquaplane behind a fast runabout, or for sailing fun when the weather's warm; when the lake freezes over, attach the runners and you'll get your share of thrills sailing on the ice. Length, 10'; beam, 33".

BOAT ACCESSORIES

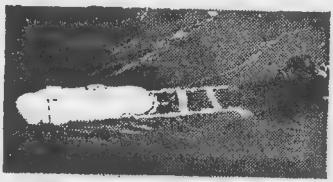
295. HEAVY-DUTY BOAT TRAILER. This big trailer uses commercial wheel, axle, and spring components to make it suitable for

No. 295 Heavy-Duty Trailer

use with boats weighing up to 3800 lbs. A source for such items is given. Wooden cradle members can be custom-tailored to your boat.

316. BOAT TRAILER. Lightweight trailer is designed to carry boats of up to 1000 lbs., and accessory dolly makes it possible to maneuver the trailer by hand when it's not connected to the car.

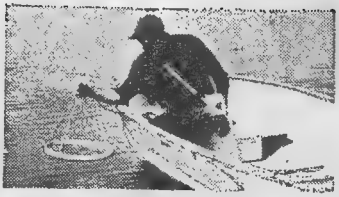
320. SCUBA SCOOTER. Water is 800 times as dense as air—you realize this as you kick your way through it in your diving outfit, using up your air supply in the effort of swimming. All this hard work is done



No. 320 Scuba Scooter

for you by the Scuba Scooter which you can build for $190 or less. The unit can be weighted for ¾ or 1 lb. positive buoyancy underwater, so that if you let go, it will rise slowly to the surface. Control is automatic; if you grasp the handle at the switch, the motor turns; if you release it, the motor stops.

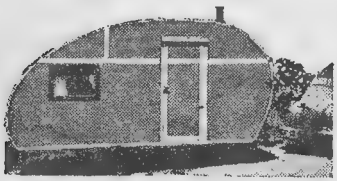
341. METAL LOCATOR. Besides the many possible underwater applications, this metal detector with a smaller coil can be used for finding buried pipes and tanks, ore deposits near the surface, and metal in lum-



No. 341 Metal Locator

ber, logs, and livestock feed. Transistorized circuitry is used for minimum weight, and greatest resistance to mechanical shock. Inexpensive penlight cells provide power for up to 100 hours of operation of the oscillator, and 200 hours in the amplifier section. Detection range depends upon the size of the object, the skill of the operator, and the type of metal. The detector responds to both ferrous and non-ferrous metals.

CAMPING GEAR



No. 50 Cabin Trailer

50. CABIN TRAILER. Ideal for weekends, fishing, or vacation trips, it's compact yet roomy and comfortable. It sleeps two, and has all the modern conveniences, including sink, water tank and pump, stove, kitchen table, electric lights, ventilator, and plenty of storage space. Construction is sturdy and simple. Length is 12′ 6″; weight, 1100 lbs.

247. TRAILER BUILT-INS. Add to the convenience of your camping rig by installing this utility cabinet and cupboard retainers. Plans also show how to make a handsome name sign for your trailer. These are simple weekend projects that use readily-available materials.

309. CAMPER FOR PICK-UP TRUCK. Built with a roof that can be quickly raised and lowered, this body will give you all the stand-up headroom of a large, heavy camper, yet it retains the easy-to-drive advantages

No. 309 Pick-up Truck Camper

of a small camper. The unit is light weight and of sturdy construction, and the fold-down feature reduces gas-wasting wind resistance. Build it yourself and you save up to $500 over a similar factory-built job.

314. CAR TOP CAMPER. Quick-fold unit makes a 4′ x 8′ canvas shelter that folds flat for traveling, opens to provide a tent that sleeps two comfortably. It can be attached to, or removed from, your station wagon in just a few minutes. Cost, with a ready-made shelter tent, is about $150; you can save considerably by making the shelter tent yourself.

325. SNO-BIRD. Whether the snow is 6″ or 6′ deep, this power-driven sled will take you where other vehicles can't go. Wherever

No. 325 Sno-Bird

there is snow to support it and clearance enough to get through, this sportsman's snowmobile will get you there. Traction is obtained with a caterpillar-type tread that grips the snow through a slot in the main ski. Front turnable ski provides steering control. You can build "Sno-Bird," using all new materials, for less than $250.

CAMPING GEAR

340. TENT-TRAILER. Mobile camping platform provides plenty of high-and-dry cooking and sleeping area for a family of six on a low-cost camping vacation. Construction is of plywood on a tubular steel trailer chassis, and a conventional umbrella tent is used.

305. FOLD-UP VACATION TRAILER. Five minutes after you reach a campsite, you can have this trailer set up to provide indoor sleeping or eating accommodations for six. When it's folded down for traveling, there's still plenty of space in the trailer body to store camping gear. The design has been carefully worked out in sub-assemblies so you can use your garage or carport as the construction area, out of the weather. You will save several hundred dollars by building this yourself.

MODELS, HOBBIES, TOYS

358. SKYROCKET. This is the famous radio-controlled plane that set an altitude record for powered model aircraft when it climbed 13,320' into the sky. Five sheets of plans cover every detail of its construction.

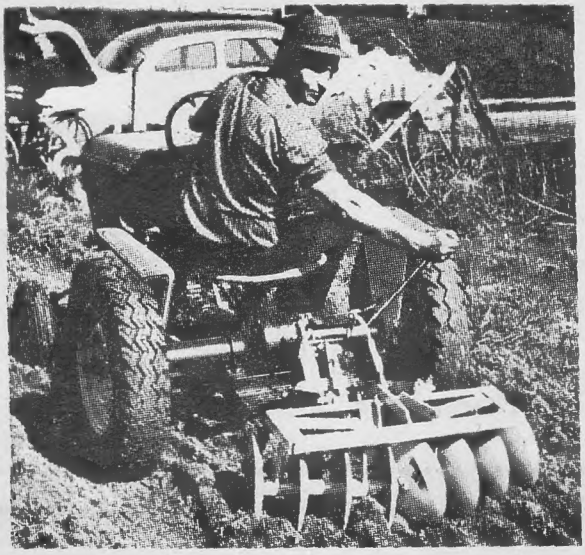
315. MIDGET VAN DE GRAAFF GENERATOR. Unit is a smaller version of the electrostatic generator listed above, and it produces about 50,000 volts. Use it to study electrical repulsion and attraction forces at work.

350. DELTA ICE KART. When the ground is covered with ice and snow, there's no need to store your kart and wait for spring. This trim, speedy ice-going kart will give you all the thrills of summer track karting plus year-round use of your kart engine.

205. SEA SLED. Streamlined, airfoil-type hull enables this 14" racing boat to zoom over the water at a fast clip, using gas engine to supply power. Construction is so simple you can build it in one day.

29. STAR DUST. This scale model of "Gypsy" (Craft Print 53) is built with frames, keel, and planking, just as a real boat. It gives a real understanding of what's involved in boat construction.

301. ELECTROSTATIC GENERATOR. This 400,000-volt Van de Graaff electrostatic generator produces 12" to 14" sparks about once every second. Plans show how to build it, and gives instructions for experiments you can perform.



321. POW'R PUP SUBURBAN TRACTOR. This powerful little tractor can be used with accessories to mow the lawn, haul leaves, do light grading, bulldoze snow, roll the lawn, pull a disc or harrow, cultivate crops, pull a seeder, or tow a sled. The "Pow'r Pup" goes a step beyond straddle-type trailers, and provides a rugged, simple, build-it-yourself machine for home and garden use. Build it for $200 or less, and use Sears tractor attachments.

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361	365	367	368	369	370	371	373		

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324	325	333	336	338	340	350	351	353	354
357	360	363	364	366	372				

These plans are $7.00 each:

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292	310	327	345	362			

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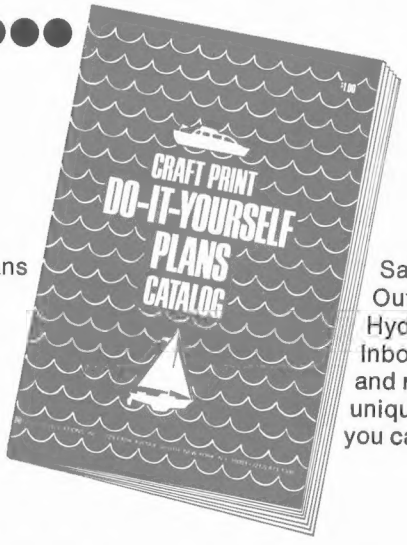

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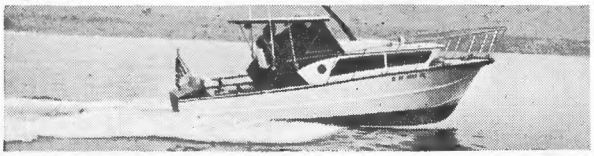

CRUISERS 16-40′ — Our new 26′ Crown Cruiser design PB-72X-2 above can be built from our plans and patterns for under $1,000. This new design has an 8′ beam, fully enclosed toilet and washroom, separate dinette set, galley with 6′ head room and can sleep 2 to 4 people. **Plans and patterns are $45. Complete boat kit, hull kits and frame kits available.**

SAIL 8′—57′

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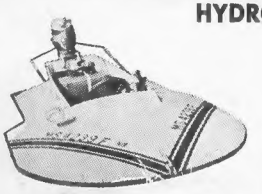
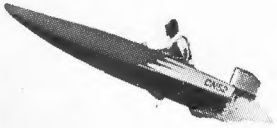
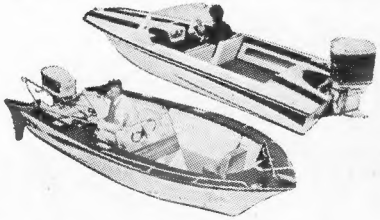


Our latest hydro design, CU 42-2. Overall length 9′10″, beam of 4′, motors up to 20 h.p., speeds to 70 m.p.h., one of many hydro designs in our new catalog. Price of plans and patterns for this new design is $22.50 or complete boat kit $219 f.o.b.



Our new runabout, design CN52-2, overall length 13′3″, beam of 58″, is available in plans and patterns for $18.50 or complete boat kit for $225 f.o.b. One of many racers in our new Plan Kit Catalog. Takes motors to 40 h.p. Ideal for racing or water skiing.

SKI BOATS — FISHING BOATS



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